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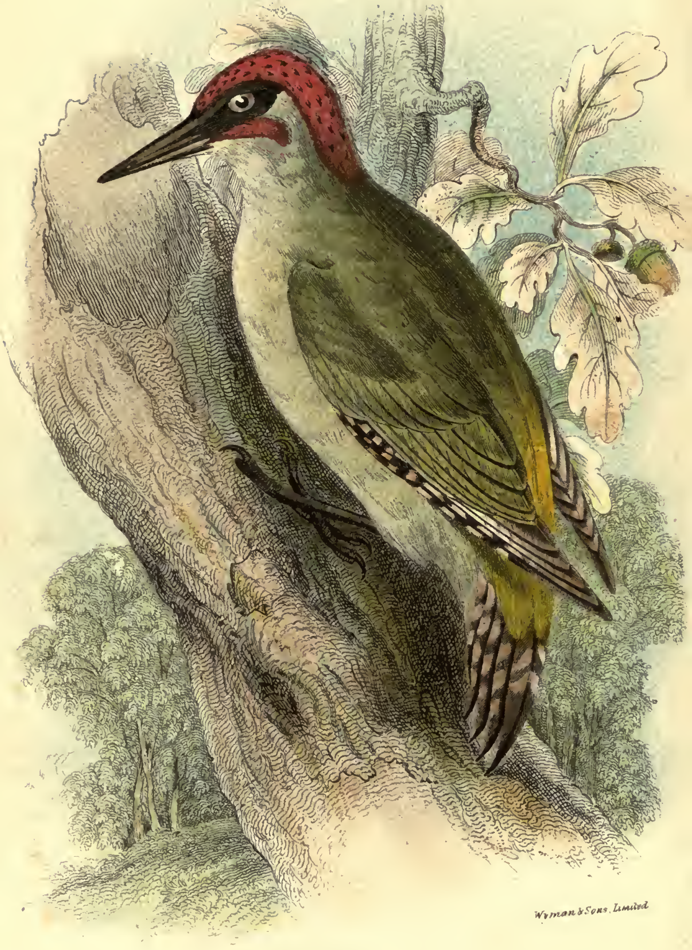
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GREEN WOODPECKER.

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EDITED BY R. BOWDLER SHARPE, LL.D., F.L.S., ETC.

A HAND-BOOK
TO THE
BIRDS
OF
GREAT BRITAIN.

BY

R. BOWDLER SHARPE, LL.D.,

ZOOLOGICAL DEPARTMENT, BRITISH MUSEUM.

VOL. II.

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PREFACE.

I HAVE but a few words to add to the prefatory remarks which will be found in the first volume. I therein sketched out the plan of the work which I proposed to follow. Since the issue of the first volume, two species have been added to the British list. Of the Sub-alpine Warbler (*Sylvia subalpina*), a specimen was shot in St. Kilda in June, 1894, by Mr. J. S. Elliot, as recorded by me in the Bulletin of the British Ornithologists' Club, Vol. IV. p. ix. Coues' Redpole (*Cannabina exilipes*) has been obtained by Dr. Bendelack Hewetson near Easington on the west coast of Yorkshire during the winter of 1893-94, as has been recorded by Mr. John Cordeaux in the "Naturalist" for March, 1894 (p. 84).

While the criticisms on the first volume of the "Handbook" have been wholly favourable and kindly, three notices in particular have appeared, in reply to which I should like to say a few words.

Dr. P. L. Sclater seems to imply ("Ibis," 1894, p. 566) that the nomenclature adopted by me in the "Handbook" is introduced into my writings for the first time, and he alludes particularly to the names of the genera in the Family *Corvidæ*, but these names are not of my own foundation. I adopted them, after monographing the whole of the Family in the "Catalogue of Birds," twenty years ago. My conclusions have been followed by naturalists in many countries, and, I hope, will continue to be so. I would further remark that Dr. Stejneger's "inconvenient discoveries" have not had a "great attraction" for me, as my kindly critic suggests. I really hate all these changes of names, and I have always had a great sympathy with the proposal of Mr. Seebohm to adopt only the best-known name for a species, but the "auctorum plurimorum" system of nomenclature, though very good in theory, would not work well in practice, for a name in a majority one year, might turn out to be in a minority two years hence, and so there would again be no stability in our nomenclature.

It is certainly unfortunate that so many older names for common species have been unearthed during recent years, but that is surely not the fault of the authors themselves, but of their descendants, who have not taken the trouble to search the whole of the literature. I have used in the present "Handbook" such names as I believe to be not only the right ones, but those which in future are most likely to be adopted by ornithologists generally; and I cannot agree with Dr. Sclater that, because this little "Handbook" is "confessedly intended for popular use, it would have been wiser to adhere to ordinary nomenclature and to avoid an unnecessary multiplicity of genera." This is exactly what I think ought *not* to be done for in a book which has such a wide sale as the "Naturalist's Library," it is more important to teach the reader the nomenclature most likely to be in vogue in the future, than to serve up to him names which a very little study on his part will enable him to discover to be out of date.

Mr. Harting has also written a friendly notice of my first volume in the "Zoologist" for 1894 (pp. 468-472), but he also complains that there is so much that is "new" in the book. It really looks as if he had allowed much recent work to escape his notice, and has only just woke up to the fact that things have been moving since he wrote his "Handbook to the Birds of Great Britain" in 1872. The arrangement followed in my book was duly set forth by me in my "Classification of Birds" in 1891, and there is therefore nothing wonderful in an author following his own ideas. The same may be said of Mr. Harting's remarks on my nomenclature, and if he had studied the Crows as diligently as he has done the Wading Birds, he would probably have found little difficulty in recognising that the black plumage of the former birds is really their only warranty for inclusion in a single genus *Corvus*, and that the characters for generic separation, when properly weighed, are as important as the genera of *Charadriidæ*, which Mr. Harting accepts without hesitation. Some of the changes in nomenclature at which he "stands aghast" might have paralysed him at any moment during the last twenty years, and, as I have already said, the genera of the *Corvidæ* are none of them of my own invention.

Mr. Harting, moreover, entirely misunderstands the principle of the duplicate generic and specific names by which such titles as *Graculus graculus* are arrived at. It is not adopted for the sake of attaching the name of the typical species to that of the genus. That this must often, and in fact generally, occur, is really a matter of chance, and I am sorry that the mere act of restoring Linnean specific names to their original position has resulted in the duplication of the name, but then the Linnean names ought never to have been used in a generic sense. Thus, if Linnæus called the Partridge *Tetrao perdix*, the name *perdix* ought to be retained at all costs for the species. When *Perdix* was taken in a generic sense and the species was called *Perdix cinerea*, I contend that it ought never to have been allowed, and if, in restoring the Linnean specific name of *perdix*, it results that the oldest generic name is also *Perdix*, and the species has to be called *Perdix perdix* (L.), I can only say that I am sorry, but it cannot be helped.

Canon Tristram's paper on the "Use and Abuse of Generic Names" ("Ibis," 1895, pp. 130-133) expresses the ideas of an old-fashioned ornithologist on modern-day work, but my critic has not shown the consistency of opinion which might have been expected from the author of such an emphatic diatribe as that which he has directed against me and my methods of work. Genera are, according to Canon Tristram, entirely arbitrary, and to be employed only for our convenience, and names should not be bestowed when there is only a single species to represent them. In order to grasp my critic's full meaning, I consulted the published "Catalogue" of his collection, and there I found the whole of the Thrushes placed under the genus *Turdus*, though this is exactly the instance he quotes in his *critique* in which these birds ought absolutely to be classified under the heading of the two genera, *Turdus* and *Merula*. Then, in order to determine what characters Canon Tristram considered to be of generic value in the only instance in which he has shared my crimes with me, I find that the Seychelles Scops-Owl was considered by him to be worthy of a new generic name, *Gymnoscops*, from the fact that "its ear-tufts, if any, are only rudimentary, and its tarsi wholly unfeathered, excepting a narrow line for about a quarter of an inch down the front of the tarsus, while the back of the joint is entirely bare." Slender distinction enough, as the describer himself seems to think, for he adds: "I venture to think that these differences entitle it at least to sub-generic, if not generic, rank." After this admission of what constitutes a generic or sub-generic difference, I am surprised that Canon Tristram should have ventured to stigmatise as "new fangled," "absolutely capricious," &c., genera which are founded on quite as strong characters as he allows to be sufficient in his own case.

He then proceeds to make a somewhat startling comparison as to the number of generic names which figure in my volumes of the "Catalogue of Birds," viz., 108, as compared with those written by my coadjutors, Mr. Seebohm and Dr. Gadow, "neither of whom invented a single new genus," Mr. Osbert Salvin (one), Mr. Edward Hargitt (four), Captain Shelley (five), Mr. Ogilvie-Grant (six), Count Salvadori (twelve),* "while Dr. Sharpe in 10½ volumes has favoured us with 108 new genera. It is obvious that the 'genus-standard' of Dr. Sharpe must be very different from that of Messrs. Hargitt, Seebohm, Salvadori, and others, who, in 9½ volumes, have been content with 28 new genera, as against his 108." A more manifestly unfair method of comparison could hardly be conceived, and I wonder at Canon Tristram attempting to prove his point by means of the above figures. Mr. Seebohm worked out the Thrushes and Warblers, a well-worn field, over much of which he had travelled in print, before he wrote Vol. V. of the "Catalogue." Dr. Gadow's volumes dealt with *Paridæ*, *Laniidæ*, *Nectariniidæ*, *Meliphagidæ*, all of which had been much studied and written about before he undertook this portion of the "Catalogue." Captain Shelley, for instance, had just completed a Monograph of the *Nectariniidæ*. The Shrikes and Tits had received much attention from several ornithologists, and Count Salvadori and Dr. Meyer had already swept the board of such new genera as might have fallen to Dr. Gadow's share in the *Meliphagidæ*, by publishing a number of new genera not long before the latter commenced to work at the "Catalogue." Mr. Salvin's volume consisted mainly of the Humming Birds (*Trochilidæ*), and it is wonderful that he even found one new genus to characterise, seeing that the family had been monographed over and over again, by

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* To have been quite fair, Canon Tristram should have added two new genera of Swifts (out of nine!) published in Mr. Hartert's half volume.

Gould, Reichenbach, Heine, Mulsant, and worked at by Von Berlepsch, Boucard, and others for years, to say nothing of Mr. Salvin's own previous study of the Family. Mr. Hargitt's four new genera of Woodpeckers were reserved for publication in the "Catalogue," and so were Mr. Ogilvie-Grant's few generic names of Hornbills and Game-Birds, but all these families had been monographed, some of them more than once, before the authors began their "Catalogues," and therefore the chance of there being any genera which had escaped notice by previous writers was extremely small, and the same may be said of the volumes written by Captain Shelley and Count Salvadori.

On the other hand, fair play would have demanded an acknowledgment of the fact that the groups of birds which fell to my lot in the "Catalogue" had been practically unworked before, and it is not in the least surprising that, in monographing such difficult families as Babbling-Thrushes, Finches, Starlings, &c., a close study should discover generic differences, while many of the larger birds, such as Bustards and Cranes, had not been monographed for many years before I did them in the "Catalogue." My views are, I dare say, not those of the older school of ornithologists, any more than are those of Dr. Reichenow and other "German friends," or those of Mr. Ridgway and Dr. Stejneger, the "American cousins," who are evidently regarded by Canon Tristram as the cause of my backslidings!

The whole question appears to me to be a very simple one. Canon Tristram evidently does not like what he calls the "new-fangled" ideas of some of the younger school of ornithologists, because they were not in vogue in his younger days, but the collections which are now in the cabinets of the British Museum provide a completeness of material with which our forefathers were totally unacquainted. It was only to be expected that the close study involved in the preparation of the "Catalogue of Birds" would result in the discovery of new genera, but there is a sure test as regards the calibre of our work in store for Canon Tristram, for myself, and for every other writer. Future generations will judge the value of our labours, and that which is good will be preserved, and that which is bad will be cast into outer darkness.

I have to thank Mr. Howard Saunders, Mr. W. E. de Winton, and Mr. Robert Read for assisting me with notes for the present volume, and special acknowledgments are due to Count Salvadori for the notes he has given me on the Ducks and Geese.

R. BOWDLER SHARPE.

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BRITISH BIRDS.

PICINE BIRDS. ORDER PICIFORMES.

"WOODPECKERS and their kin" might be the popular title of this Order of birds, but it includes two Families which cannot be called Woodpeckers in the true sense of the word, viz., the Puff-Birds (*Buccones*) and the Jacamars (*Galbulæ*). The two latter Sub-orders are only found in Central and Southern America, and are thus characteristic of the Neotropical Region, *i.e.*, the Tropical Region of the New World.

The Woodpeckers, on the other hand, are almost cosmopolitan in their distribution. They are found in every part of Europe and Asia, Africa, as well as North and South America, ranging far to the north and south, but they are absent in the Australian Region. Thus they are entirely unknown in the islands of the Pacific Ocean, in New Zealand and Australia itself, nor do we meet with any Woodpecker in the Papuan or Maluccan islands, until we come to Celebes. The fauna of this island exhibits features which are partly Australian and partly Indian, but in possessing Woodpeckers and Monkeys (cf. Forbes, Nat. Libr. Primates, ii. p. 250), its zoological affinities incline to the Indian Region. Wallace's line, which passes between the islands of Bali and Lombock, has also been supposed to show an absolute barrier between the terrestrial fauna of the Indian and Australian Regions, and it is so in the majority of cases: nevertheless, two genera of Woodpeckers cross it, as *Iyngipicus grandis* and *Dendrocopus analis* are found in Lombock and Flores.

THE WOODPECKERS. SUB-ORDER PICI.

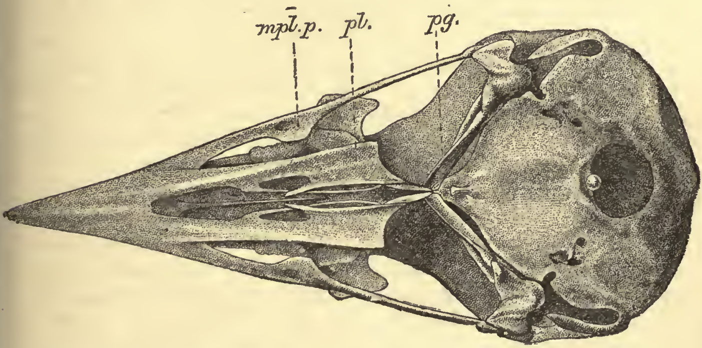
Externally these birds may be distinguished by their "zygodactyle" foot. "Yoke-footed" is another name frequently applied to them, but, described in simple language, they may be said to have two toes "in front" and two "behind." This may seem a very unscientific way of characterising the Woodpeckers, but it is the first character to look for in one of these birds. Then they have usually a stiffened tail of sharp-pointed feathers—but not in every case, for the Wrynecks and Piculets have soft-plumaged tails, while some Passerine Birds, such as the Tree-Creepers (*Certhiidæ*), also possess spiny tails (cf. vol. i. p. 119), as do also the South American Spine-tails (*Dendrocolaptidæ*), so that this cannot be reckoned a peculiar characteristic of Woodpeckers. Then, again, turning to anatomical structure, we find that the Woodpeckers have a long and extensile tongue, the bones of which, the "hyoid cornua" as they are called, extend backwards ove the skull. The tongue, thus capable of extension, and o enormous length, is furnished with muscles which enable the bird to dart it out and retract it in the most extraordinary manner. This extensile tongue is found in the Wrynecks as well, but is not a character exclusively diagnostic of the Woodpeckers, for two North American genera, *Sphyropicus* and *Xenopicus* have an ordinary tongue, as in the majority of Passerine Birds. On the other hand, an extensile tongue is found in the Humming-Birds (*Trochilidæ*) and Sun-Birds (*Nectariniidæ*)

The following description of the mechanism of the Woodpecker's tongue is copied from that given by Sir William Flowe in the Bird-Gallery of the British Museum.

"In the majority of the *Picidæ* the tongue is long, vermiform, pointed, and barbed at the tip. To permit of its being projected or withdrawn as required, the hyoid cornua are prolonged backward, sliding in a sheath which curves round the top of the skull. The sub-lingual glands are greatly developed, secreting a viscid fluid which covers the tongue and causes insects to adhere to it. The peculiar modification of these organs and their application in procuring food are closely analogous to those found in the Ant-Eaters and several othe Mammals, and in the Chameleon among Reptiles.

"In some species the hyoid cornua slide backwards and forwards in the sheath as the tongue is retracted or protruded; in others, as in the common English Green Woodpecker, their ends are fixed to the sheath, and the protrusion of the tongue is caused by the action of the genio-hyoid (*protractor linguæ*) diminishing the curve in which the cornua lie when the tongue is withdrawn."

Another curious anatomical feature in the Woodpeckers is found in the base of the skull, the vomer being slender and split, with the lateral halves separated. The late Professor W. Kitchen Parker described this feature of the Woodpecker's skull as "saurognathous," on account of its Saurian or Reptilian character.



Ventral view of skull of *Dendrocopus major* (enlarged). [From the Catalogue of the Osteological Specimens in the Museum of the Royal College of Surgeons.]. *mpl. p.* maxillo-palatine process, *pl.* palatine, *pg.* pterygoid.

Other anatomical characters may be added for the definition of this Sub-order, and may be found in all recent works on avian anatomy, but they need not be further mentioned here.

THE WOODPECKERS. FAMILY PICIDÆ.

The late Mr. Edward Hargitt, our best authority on this Family, and to whose work we are indebted for much of the information here given, divides the *Picidæ* into three Sub-families, viz., the Woodpeckers (*Picinæ*), the Piculets (*Picumninæ*) and the Wrynecks (*Ïÿnginæ*). The second of these Sub-families has a soft and rounded tail, without spiny shafts. It consists of about forty species of very small size, mostly found in Central and South America, but also represented in Africa, as well as in the Himalayan and kindred ranges of mountains in Asia.

Both the Woodpeckers and Wrynecks are represented in Great Britain, the former by three species, the latter by a single one.

THE TRUE WOODPECKERS. SUB-FAMILY PICINÆ.

Some forty-five genera are comprised in this Sub-family, of which two are natives of Great Britain. Besides the three species which are residents, there are several which have been chronicled as having wandered to the British Isles. The Great Black Woodpecker (*Picus martius*) has been recorded over and over again, but a careful enquiry into all the records by Mr. J. H. Gurney, has thrown doubt on every one of the occurrences, and it is indeed a very unlikely bird to wander from its Scandinavian home. The only specimen examined by me in the flesh, in this country, had its crop filled with insects, which I sent for examination to the late Professor Westwood of Oxford, and they were pronounced by him not to be British, but Swedish, species! The Great Black Woodpecker measures seventeen inches in length, is entirely black above and below, the male having a red crown, while in the female the red colour is confined to the occiput.

The White-backed Woodpecker (*Dendrocopus leuconotus*) is said to have occurred in the Shetland Islands. The specimen believed to be of this species was figured by the late Mr. Gould in his "Birds of Great Britain," and it appeared to me at the time to be a young *D. leuconotus*. Recent observers, however, have come to the conclusion that the bird was only a young of the Spotted Woodpecker. *D. leuconotus* may be distinguished, when adult, by its pure white rump, contrasting with the black of the upper back; the male has the head and occiput red, and the female has these parts black. The total length is about ten inches, and the wing a little over five and a half inches. Its native home is Northern and Central

Europe, and its range extends across Southern Siberia to Manchuria and Corea.

THE GREEN WOODPECKERS. GENUS GECINUS.

Gecinus, Boie, Isis, 1831, p. 542.

Type, *G. viridis* (Linn.).

This genus constitutes a familiar Old World type of Woodpecker, comprising seventeen species, all greatly resembling each other in appearance. The best-known is our European bird, *G. viridis*, which is represented in Spain by Sharpe's Green Woodpecker (*G. sharpii*), and in North-east Africa by Vaillant's Green Woodpecker (*G. vaillanti*), while in the different parts of Europe and Asia other species are distributed; several being inhabitants of the Indian Region as far south as Sumatra and Java.

In the genus *Gecinus* the feathering of the neck is full (in many species, called the "Narrow-necked" Woodpeckers, the plumage of the neck is very scanty), the opening of the nostrils is covered with close-set feathers or bristles, the outer anterior toe is about equal in length to the outer posterior toe, which, again, is equal in length to the tarsus. The wing is moderately long, and the tail is composed of strong and spiny feathers, the outer one on each side being so short that it is often overlooked, as it is hidden by the under tail-coverts; this is called the "dwarf" tail-feather. The bill is nearly straight, and there is a distinct ridge in the culmen (cf. Hargitt, Cat. Birds Brit. Mus. xviii. p. 3).

THE GREEN WOODPECKER. GECINUS VIRIDIS.

(*Plate XXXII.*).

Picus viridis, Linn. S. N. i. p. 175 (1766); Macg. Br. B. iii. p. 91 (1840).

Gecinus viridis, Dresser, B. Eur. v. p. 77, pl. 285 (1871); Newton, ed. Yarr. Br. B. ii. p. 457 (1881); B. O. U. List Br. B. p. 79 (1883); Seebohm, Br. B. ii. p. 364 (1884); Saunders, Man. p. 263 (1889); Hargitt, Cat. B. Brit. Mus. xxiii. p. 36 (1890); Lilford, Col. Fig. Br. B. pt. xvi. (1890).

Adult Male.—General colour above uniform yellowish-olive;

the rump and upper tail-coverts brighter chrome-yellow, the feathers being tipped with this colour; quills externally green, with dull white spots on the outer aspect of the primaries, the inner webs spotted with white; crown of head crimson, as also a broad moustachial stripe; nasal plumes and fore-part of face black; sides of face and under surface of body light yellowish or yellowish-white; throat paler; the vent and under tail-coverts with crescentic dusky marks or bars; bill blackish, the base of the lower mandible yellow; feet grey; iris white. Total length, about 12·5 inches; culmen, 1·7; wing, 6·4; tail, 4·7; tarsus, 1·3.

Adult Female.—Like the male, but has the moustachial stripe black. Total length, 12 inches; wing, 6·4.

Young.—Resemble the adults, but much duller green in colour, with dusky bars on the upper surface; forehead and eyebrow black, with tiny white spots; sides of face blackish, streaked with white; a black moustache, minutely spotted with white; under surface of body yellowish-white, profusely spotted with blackish.

Range in Great Britain.—Most common in the southern counties, but plentiful in many of the midland districts, as far as the south of Yorkshire. North of this it is rare, and has only been found breeding occasionally in the Border counties. In Scotland it can only be of occasional occurrence, and from Ireland it has been but twice recorded.

Range outside the British Islands.—Generally distributed over Europe as far east as the Ural Mountains, the Caucasus, and Persia. It occurs throughout France and Italy, but does not cross the Mediterranean, and is replaced in the Spanish Peninsula and Portugal by *Gecinus sharpii.* It breeds in Norway up to 63° N. lat.; in Sweden and Russia up to about 60° N. lat. That it is not a migratory species is shown by the fact that it has occurred but once in Heligoland.

Habits.—The noisy laugh of the "Yaffle" (as this bird was popularly called in the days of Chaucer, and is even now known by the same name in many country districts of the south of England) is a sound familiar enough to visitors to the New Forest and other parts of England, where the bird is still to be found. The Green Woodpecker is indeed more often heard than seen, but it may occasionally be detected, as it wends its way from tree to tree with a dipping flight, exposing the yellow of its back as it flies away. It is more often seen near the ground than the two other British Woodpeckers, and it may sometimes be observed flying from one small tree to another in the hedgerows. Another reason for its ground-frequenting habits is that it feeds largely on ants, and commits great havoc among the nests of these industrious little insects. When it alights on a large tree, it generally commences at the bottom, and works its way to the top with great rapidity, though, if the bird be conscious of the proximity of a stranger, it generally keeps to the opposite side of the tree, and its upward progress is marked only by an occasional sight of its head, as it peers round to take a glance at the intruder. It finds much of its food beneath the bark of old trees, and it is therefore generally to be observed in parks and old forests, these being the favourite home of the Green Woodpecker. Its food consists almost entirely of insects, but it is also said to eat nuts and acorns, and occasionally wasps and bees, as well as their grubs. When hammering at the bark of a tree, the bird receives considerable support from its stiffened tail-feathers.

Nest.—None. The eggs are laid at the bottom of a hole, hewed by the birds themselves, on the chips of wood accumulated during the excavation of the nest-hole. The latter is often situated at but a short distance from the ground, and the circular entrance to the nest is so perfectly made that it might have been executed by an expert carpenter rather than by the bill of a bird. As a rule only hollow trees are attacked, but it is an undoubted fact that occasionally sound trees are attempted, with the result that the Woodpecker has to desist in its effort to bore a nest-hole, and is driven to seek a more rotten tree for its operations.

Eggs.—From five to seven, or even eight, in number. Pure white and glossy in appearance. Axis, 1·25–1·15; diam., 0·95 0·85.

THE PIED WOODPECKERS. GENUS DENDROCOPUS.

Dendrocopus, Koch, Baier. Zool. i. p. 72 (1816).
Type, *D. major* (L.).

Of the Pied Woodpeckers about forty species are known, and their colouring is, as their name implies, principally black and white. The majority of them are northern birds, being found in Europe and Northern Asia, and also in North America. In the New World the genus reappears in a curious way, as no species is found to the south of the Isthmus of Panama, until *D. lignanus* and *D. mixtus* are met with from Peru to Chili, and in Southern Brazil and Argentina.

There are but two species resident in the British Islands, a large and a small one, which are described below.

I. THE GREAT SPOTTED WOODPECKER. DENDROCOPUS MAJOR.

Picus major, Linn. S. N. i. p. 176 (1766); Dresser, B. Eur. v. p. 19, pl. 275 (1871); Seeb. Br. B. ii. p. 354 (1884); Lilford, Col. Fig. Br. B. pt. vii. (1888).
Picus pipra, Macg. Br. B. iii. p. 80 (1840).
Dendrocopus major, Newt. ed. Yarr. Br. B. ii. p. 470 (1881); B. O. U. List Br. B. p. 77 (1883); Saunders, Man. p. 265 (1889); Hargitt, Cat. B. Br. Mus. xviii. p. 211 (1890).

Adult Male.—General colour above black and white; the scapular plumes white, slightly dingy; quills spotted or barred with white, the spots or patches on the closed wing giving the appearance of five bars; tail black, the four median feathers entirely of this colour, the next ones black at the base, white at the tip with black bars; nasal plumes black; forehead drabby-brown; crown of head and nape blue-black, the occiput red; sides of face white; a broad moustachial band of black connected with the black nape; under surface drabby-brown from the throat to the breast; remainder of under surface crimson; under wing-coverts and axillaries white, the lower coverts spotted with black; "bill slaty-black; legs, feet, and claws dark brown; iris red" (*H. Seebohm*). Total length, 10 inches; culmen, 1·1; wing, 5·5; tail, 3·7; tarsus, 1·0.

Adult Female.—Similar to the male in colour, but having no red on the occiput; the entire head is, in consequence, black. Size about the same as that of the male.

Young.—More dingily coloured than the adults, especially below, the crimson on the abdomen being very dull. They may easily be told by their red crowns, by the white tips to the primary quills, and by the dusky stripes on the flanks and thighs.

The large size of the present species prevents its being mistaken for any of the other Pied Woodpeckers included in the British list. It may also be recognised by its having the back and rump black. The North American *P. villosus*, which approaches it in size, has a white streak down the middle of the back.

Range in Great Britain.—A somewhat local bird, and one of the most difficult to observe, on account of its shy nature. It is found nesting in the woodlands of the southern and midland counties of England, but is rare to the north of Yorkshire. In Wales it is a scarce species, and in Scotland it is not now known to breed. In some years considerable numbers visit the British Islands during the autumn migration, especially the eastern coasts, as in 1886, 1887, and again in 1889. It has only been noticed in Ireland at scattered intervals, and has never been found breeding in that country.

Range outside the British Islands.—Distributed throughout Europe in suitable localities, reaching just beyond the Arctic Circle in Scandinavia, and found as far as Archangel in Northern Russia, but the most northern limit recorded in the Ural Mountains is 64° N. lat. Thence, according to Mr. Hargitt, its range extends across Southern Siberia to Amurland and Corea. The British Museum possesses examples of the Great Spotted Woodpecker from Portugal, Spain, N. Italy, and from Asia Minor. The above-named authority also considers the bird of the Canary Islands to be the same as our British species, though there is a tendency to a darker under surface in the specimens from these islands. In every direction races of *Dendrocopus major* are found, which take its place in other countries of the Palæarctic Region. Thus *D. cissa*, a white-breasted form, is found in Eastern Siberia and Kamtchatka; *D. poelzami*, a dark form, in the Caucasus; *D. leucopterus*, a pale form again, in Central Asia, &c.

Habits.—No birds are more difficult to study in the field than the Woodpeckers, and the present species, with us, is one of the shyest of birds. Its presence is sometimes made known by its call-note, which our best field-naturalists render as "tchick" or "chink." It is certainly a peculiar call, and, when once recognised, is not likely to be mistaken. Mr. Seebohm also states that it has a second note like "the syllable *tra*." This I have not noticed, but the other resounding note may often be heard in our woodlands, though the bird itself will be rarely observed. In the spring-time both this Woodpecker and its smaller cousin, *D. minor*, produce a loud noise by drumming with their bills on the branches or twigs of a tree, and these vibrating taps are generally supposed to be a signal or call-note between the sexes. Certainly this noise can be heard at a considerable distance. The food of the Great Spotted Woodpecker consists of insects of all sorts, which it procures after the manner of its kind by hammering at the bark of a tree and prising it off. It also feeds on fruit and nuts, acorns, berries, &c. It is the only British Woodpecker which is a migrant, and nearly every year considerable numbers cross the ocean. When I was in Heligoland with Mr. Seebohm, five young *D. major* were brought to us alive one Sunday morning, having been caught by boys in the potato-fields, where they had dropped to rest, in an exhausted state.

Nest.—None. As with other Woodpeckers, the eggs are laid on chips or powdered wood at the end of a hole, hollowed in nearly every case by the birds themselves. The eggs are laid about the middle of May, and both birds are said to assist in their incubation.

Eggs.—From five to seven in number, sometimes eight being known. Axis, 1·0–1·15; diam., 0·75–0·85.

II. THE HAIRY WOODPECKER. DENDROCOPUS VILLOSUS.

Picus villosus, Forster, Phil. Trans. lxii. p. 383 (1772).
Dendrocopus villosus, B. O. U. List Br. B. p. 77 (1883); Saunders, Man. p. 266 (1889); Hargitt, Cat. B. Brit. Mus. xviii. p. 230 (1890).

Adult Male.—Of moderate size. Black and white, with a broad white stripe down the middle of the back; scapulars, rump, and upper tail-coverts black; four centre tail-feathers black, the next one black for the basal half, white for the terminal half, the two outer feathers white with a black spot at the base; none of the tail-feathers barred; wing-coverts and all the quills spotted with white; nasal plumes buffy-white, tipped with black; a scarlet band on the occiput. "Bill bluish-grey, towards the end black; feet bluish-grey; iris brown" (*J. J. Audubon*). Total length, 8·5 inches; culmen, 1·25; wings, 4·85; tail, 3·0; tarsus, 0·85.

Adult Female.—Similar to the male, but having no scarlet band on the occiput. Total length, 8·5 inches; wing, 4·8.

Young.—Differs from the adults in having the feathers of the crown tipped with orange-red.

Range in Great Britain.—On two occasions the Hairy Woodpecker is said to have occurred in the British Islands, both occurrences having taken place in Yorkshire: one a hundred years ago, and another near Whitby in 1849. The latter specimen has been presented by Mr. F. Bond to the British Museum.

Range outside the British Islands.—According to Mr. Hargitt, North America, from the Atlantic to the eastern base of the Rocky Mountains, and sometimes to the west of the latter.

III. THE DOWNY WOODPECKER. DENDROCOPUS PUBESCENS.

Picus pubescens, Linn. Syst. Nat. i. p. 175 (1766).
Dendrocopus pubescens, Hargitt, Cat. Birds Brit. Mus. xviii. p. 238 (1890).

Adult Male.—Of small size. Black and white, with a broad white stripe down the middle of the back, and distinguished by having bars on the lateral tail-feathers; a red band on the occiput. Total length, 6 inches; culmen, 0·65; wing, 3·75; tail, 2·3; tarsus, 0·65.

Adult Female.—Similar to the male, but with more or less white on the occiput, which has no red band on this part of the head. Total length, 6 inches; wing, 3·9.

Young Male.—Like the adult, but wanting the red occipital band; the whole of the feathers of the crown being tipped with red, with dusky bases; the occiput spotted with dull white; some obscure dusky stripes on the sides of the body and under tail-coverts.

Range in Great Britain.—Has only occurred once, when a specimen was shot by the Rev. O. Pickard Cambridge, F.R.S., near his home at Bloxworth in Dorsetshire, in December, 1836. Some doubt has been thrown on the authenticity of the specimen in Mr. Cambridge's possession, and it has been hinted that the specimen might have been changed by the bird-stuffer who mounted it. I have written to the owner about the bird in question, and he tells me that he has not the slightest doubt that the specimen he still has in his house is the identical one which he shot. Sixty years ago, a Downy Woodpecker would have been worth much more money to a dealer than a Lesser Spotted Woodpecker, and it would not have been worth while for anyone to have changed the one species for the other. *D. pubescens* has once been shot near Elbeuf in France.

Range outside the British Islands.—A North American species, occurring as far as Alaska in the north-west, and Florida in the south.

IV. THE LESSER SPOTTED WOODPECKER. DENDROCOPUS MINOR.

Picus minor, Linn. S. N. i. p. 176 (1766); Dresser, B. Eur. v. p. 53, pl. 282 (1872); Seebohm, Br. B. ii. p. 359 (1884); Lilford, Col. Fig. Br. B. pt. x. (1889).

Picus striolatus, Macg. Br. B. iii. p. 86 (1840).

Dendrocopus minor, Newton, ed. Yarr. Br. B. ii. p. 477 (1882); B. O. U. List Br. B. p. 78 (1883); Saunders, Man. Br. B. p. 267 (1889); Hargitt, Cat. Br. Brit. Mus. xviii. p. 252 (1890).

Adult Male.—General colour black and white; scapulars white, the lower ones white barred with black; lower back barred with black and white; rump and upper tail-coverts black; quills black, spotted on the outer web with white, and barred on the inner web; four central tail-feathers black, the others for the most part white, barred with black, the outermost or "dwarf" feather black with a white tip; crown of head crimson, the feathers having dusky bases and concealed white spots; sides of hinder crown, occiput, nape, and hind-neck black; forehead pale buff, brownish at base; sides of face and sides of neck white, the ear-coverts light brown; a black moustachial stripe running up behind the ear-coverts, and widening on the sides of the neck; under surface of body brownish-white, clearer white on the throat; sides of body with narrow streaks of black, the streaks taking the form of arrow-head spots on the under tail-coverts; under wing-coverts and axillaries white, with a few dusky spots; "bill, legs, and feet dark slate-grey; iris reddish-brown" (*H. Seebohm*). Total length, 5·8 inches; culmen, 0·75; wing, 3·6; tail, 2·4; tarsus, 0·6.

Adult Female.—Similar to the male, but without any red on the crown, the forehead and fore-part of the latter being buffy-white. Total length, 5·8 inches; wing, 3·6.

Young.—Similar to the adults, but more dingy and sooty-brown above; no brown colour on the base of the forehead; only the centre of the crown crimson, the feathers being dingy-white at the base.

Range in Great Britain.—Inhabits nearly the same districts as the Great Spotted Woodpecker, and is in many parts of the south of England the most plentiful of the three species of Woodpecker indigenous to this country. Lord Lilford says the same with regard to Northamptonshire. Northwards it becomes rarer, and is local and not plentiful in Yorkshire. In the old park-lands of the Thames Valley it is frequently to be noted, and it is even a bird of the London district, for I have seen a specimen killed in Kensington Gardens, and the species is frequently to be seen near Chiswick. It visits some elm-trees in my own garden, and can be seen and heard on almost any winter's afternoon in the grounds of the "Chiswick Golf Club."

In Scotland and Ireland the Lesser Spotted Woodpecker has only occasionally been noted, but Mr. Robert Service has given to Mr. Howard Saunders notice of its capture on three occasions in the Solway district.

Range outside the British Islands.—The present species is generally distributed throughout Europe, but is decidedly less frequent in the south, though it is found in Algeria and is a resident in the Azores. In Scandinavia it breeds as far as 70° N. lat., and in Russia it is to be found as far north as Archangel and to about 67° N. lat. on the Petchora and the

Ob. Mr. Hargitt considers that specimens from the Ussuri River in Eastern Siberia, and from the island of Yezo, cannot be separated from *D. minor*, though he admits that individuals from the last-named locality are not typical. The same authority states that from the Southern Urals, "across Siberia north of about 55° N. lat. into Kamtchatka and Bering Island," the place of *D. minor* is taken by *D. pipra*, a species which differs from *D. minor* in being purer white below and in having scarcely any streaks or spots on the under tail-coverts, while the black bars on the lower back and rump are scarcely discernible. In the Caucasus another species, *D. quadrifasciatus*, replaces *D. minor*. Little is known of this species, which is said to show only four, instead of five, white bars on the wing, when the latter is closed. A very distinct form, *D. danfordi*, is found in Asia Minor, easily recognised by the black line of the moustache being directed upwards behind the ear-coverts and joining the black of the occiput.

Habits.—This species is more often to be observed, at least in the south of England, than any of the three English Woodpeckers, and it differs a good deal in its habits from the Great Spotted Woodpecker. In flight, as in size, it much more resembles the Nuthatch, and its note is a sort of compromise between that of the latter species and that of a Wryneck. In fact its cry, when heard in winter, is somewhat startling from its similarity to the Wryneck's call, until one remembers that the last-named bird is far away in the south, and that the oft-repeated note can only be that of the Lesser Spotted Woodpecker. It certainly descends more often to the lower branches of the big trees than does *D. major*, and is not unfrequently seen hanging under a bough or climbing up the smaller twigs of a large elm or poplar. Its nest has also been found at low elevations, but as far as my own experience goes, the nest is a difficult one to obtain, and near Cookham in Berkshire, where the bird is by no means uncommon, the nest is exceptionally difficult to reach, as it is usually placed in a high and rotten branch of a poplar tree. At times it descends to the orchards, and the late Mr. John Henry Gurney told me of a pair which frequented the orchard in a house where he was staying, and allowed him to observe their ways at a short distance from his window.

The food of the present species consists mainly of insects, which it obtains by splitting off the bark of the trees, but, like other Woodpeckers, it will also feed on fruit and berries, though it never seems to descend to the ground to feed on ants like the Green Woodpecker. The drumming on a small branch of a tree, supposed to be a call-note between the sexes, is often heard in the spring.

Nest.—None. A neatly made hole is drilled into a dead or decayed branch by the birds themselves, and there at the distance of six or eight inches downwards, the eggs are laid in a small chamber, on the chips of wood or the powdered dust caused by the excavation. Such a nest-hole can be seen in the Bird-Gallery of the British Museum, and is the identical one described by Mr. Gould in his "Birds of Great Britain." This bird often takes advantage of any hole which it may find in a decaying tree and may be found nesting in a pollard willow or an ancient fruit-tree.

Eggs.—From five to eight in number. They are laid about the middle of May, and are pure ivory-white. Axis 0·8–0·9; diam., 0·55–0·7.

THE WRYNECKS. SUB-FAMILY IŸNGINÆ.

The Wrynecks constitute a little group of Woodpeckers, with a soft-plumaged tail, rather long, and variegated and mottled like the general colour of the upper surface of the body. The bill is stout and shorter than the head, and the nasal aperture is not concealed by bristly plumes, but, on the contrary, is exposed and partially hidden by an overhanging membrane. The feet are zygodactyle and resemble those of a Woodpecker in every respect, and the long extensile tongue is exactly fashioned like that of the other members of the Family *Picidæ*.

The Wrynecks are represented by a single genus *Iÿnx*. This name is written "*Yunx*" in most works on Natural History, but, as Dr. Henry Wharton has pointed out, the name is derived from *ἰύξω*, "to cry out": hence *Iÿnx*.

THE WRYNECKS. GENUS IŸNX.

Yunx, Linn. Syst. Nat. i. p. 172 (1766).

Type, *I. torquilla* (L.).

Only four species of Wryneck are known, three of which are resident in Africa and peculiar to that continent. These are *I. pectoralis*, which ranges from Natal to the Transvaal, and the Congo Region in the west, *I. pulchricollis*, confined to the Upper White Nile districts, and *I. æquatorialis*, from Shoa and Southern Abyssinia. The fourth species is the Wryneck of Europe.

I. THE COMMON WRYNECK. IŸNX TORQUILLA.

Yunx torquilla, Linn. S. N. i. p. 172 (1766); Macg. Br. iii. p. 100 (1840).

Iÿnx torquilla, Dresser, B. Eur. v. p. 103, pl. 289 (1875); Newton, ed. Yarr. Br. B. ii. p. 487 (1881); B. O. U. List Br. B. p. 80 (1883); Seebohm, Br. B. ii. p. 372 (1884); Saunders, Man. Br. B. p. 261 (1889); Hargitt, Cat. B. Brit. Mus. xviii. p. 560 (1890).

Adult Male.—General colour above variegated, brown and grey and rufous with black markings and vermiculations, including the tail, the latter grey with irregular bars of white and black; the scapularies and inner secondaries rather more rufous than the back, with black median stripes; sides of face and sides of neck, throat, and chest, buff with narrow bars of black, the chin whiter; a whitish streak above the ear-coverts, which are rufous-brown, barred with black; under-parts creamy-white, with a shade of rufous on the upper breast and sides of the body and thighs, with black arrow-head shaped markings or spots; under tail-coverts buff, with faint black markings; "bill, feet, and claws pale greyish-brown; iris light brown" (*W. Macgillivray*). Total length, 6·5 inches; culmen, 0·6; wing, 3·35; tail, 2·6; tarsus, 0·7.

Adult Female.—Similar in colour to the male. Total length, 6·5 inches; wing, 3·15.

Young.—Similar to the adults, but without any spots on the abdomen.

Range in Great Britain.—A summer visitor, arriving early in April, and leaving in September. It is principally to be found in the south of England, but becomes rarer in the Midlands, and farther north it must be considered a scarce bird, though the species has occurred in most of the Scottish counties, and it has been met with in the Orkney and Shetland Islands. In Ireland it has been noted but twice, in the summer of 1878, and again in the Arran Islands, on the 6th of October, 1886.

Range outside the British Islands.—Generally distributed throughout Europe, having reached even to the Færoe Islands. In Scandinavia it is found up to 62° N. lat., and it also visits the neighbourhood of Archangel, but is not found so far to the north in its Asiatic range, which is believed to extend across Siberia to Kamtchatka and the Japanese Islands. The Asiatic Wryneck was for a long time believed to be a different species, as it is somewhat smaller than the European bird, but it is now considered to be identical with the latter (cf. Hargitt, Cat. B. Brit. Mus. xviii. p. 560). In winter our Wryneck retires to Africa, but does not go so far south as many of our European migrants, as it is not known to wander farther than Kordofan in North-east Africa, and Senegambia on the west coast. Doubtless most of the Wrynecks, which breed in Northern Europe, go no farther in winter than to Northern Africa, though in most of the Mediterranean countries the species is regarded as a bird of passage only. In the East, the winter homes of the species appear to be in the northern parts of the Indian Peninsula and in Southern China.

Habits.—From the fact of its arriving about the same time as the Cuckoo, the Wryneck has acquired its popular name of "Cuckoo's Mate." It has been said to reach this country as early as March, and even to occur during the winter months. It is doubtful, however, whether the species has not been mistaken for the Lesser Spotted Woodpecker, which is a resident bird in Great Britain. The cry of the latter species might easily be mistaken for that of the Wryneck, when heard in the depth of winter.

In many parts of the south of England the bird is called the "Pee-pee," from its curious note, which is a musical and oft-repeated iteration of the above syllables. It visits the neighbourhood of London regularly on migration, and is heard every spring in my own garden at Chiswick. It even nests in the western suburbs, and, by constant care in driving off the hostile Starling, Dr. Günther has succeeded in protecting the Wrynecks in his garden at Kew, to which the birds returned for several years in succession. Like its relations, the Woodpeckers, the Wryneck is a very shy bird, and its peculiar note is the chief indication of its presence in the neighbourhood. It is met with in all kinds of situations, but is most commonly seen in orchards and park-lands, and it frequents the vicinity of habitations in a much more familiar degree than do any of the Woodpeckers; so that it will not disdain to accept the accommodation of nesting-boxes put up in the trees for its especial benefit.

Although a true member of the Family *Picidæ*, by reason of the structure of its foot and its extensile tongue, the Wryneck is not given to climb trees in the same way as the above mentioned birds, as its soft-plumaged tail would be of no service to it in climbing, and it is therefore often to be seen perched on a branch like an ordinary Passerine bird, while it not unfrequently visits the ground. On occasion, however, it runs up a tree exactly like any true Woodpecker, and I once shot a Wryneck as it was climbing up the woodwork of the Great Western Railway bridge at Bourne End on the Thames.

The food of the Wryneck consists entirely of insects, and ants and their eggs constitute its favourite food. Although, from its feeding so much on the ground, it accumulates, in a state of nature, a considerable amount of grit into its stomach, I have found young Wrynecks very difficult to rear, since after a time, the rape seed and soaked bread, which suits them so well for a time, ultimately irritates their tongue to such an extent as to produce inflammation, and I have always had to let my pretty pets fly, that they might find their proper food for themselves in the woods.

The name of "Snake-Bird," often applied to the present species, is supposed to be derived from the curious way in which a wounded or captured bird writhes and twists its long neck about, while the darting out of the tongue has doubtless had something to do with the idea of a snake.

Nest.—None. The eggs rest upon the dry chips or dead wood at the end of the hole, which is generally selected and not excavated by the birds themselves. Sometimes a nest-hole is somewhat enlarged, but the Wryneck never seems to hammer out a hole like the Woodpeckers. The nest-hole varies in depth, and sometimes the eggs are deposited at a considerable distance in the tree, while at other times the hole is shallow, and the eggs can be seen from the entrance.

Eggs.—From six to eight in number, sometimes as many as ten; and an instance is recorded by Mr. Norgate of a female Wryneck laying forty-two eggs for two years in succession (1872-3). As Mr. Seebohm remarks, in 1874 "her reproductive powers were apparently exhausted, as only one egg was laid, and in 1875 the place was deserted!" The eggs are pure white, a little larger than those of the Lesser Spotted Woodpecker, and not so glossy as the eggs of the latter bird. They measure 0·55–0·65 inch in diameter; axis, 0·8–0·95.

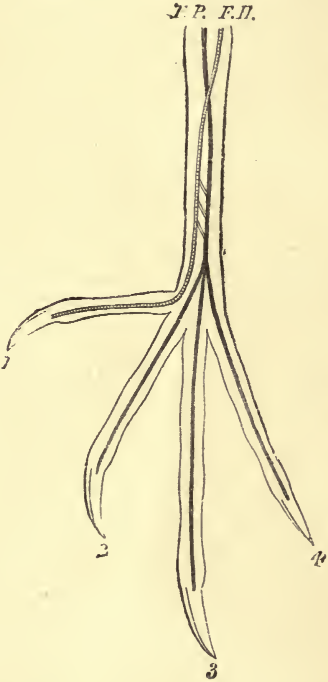
CUCULINE BIRDS. ORDER COCCYGES.

THE CUCKOOS. SUB-ORDER CUCULI.

The Cuckoos have a scansorial or climbing, *i.e.* a zygodactyle, foot, with two toes directed forwards and two backwards. The hallux, or hind-toe, is served by the *flexor longus hallucis* tendon only, while the second, third, and fourth toes are connected with the *flexor perforans digitorum*. In this respect Cuckoos resemble the Game-Birds. The palate is bridged or "desmognathous," and there are no basipterygoid processes; there is no "after-shaft" to the feathers, and the oil-gland is nude. The number of tail-feathers is only ten, except in the South American genera, *Guira* and *Crotophaga*, where they are eight in number.

By the above combination of characters the Cuckoos may be recognised from all other birds, and the only other Sub-order of the *Coccyges* consists of the *Musophagi*, the Plantain-Eaters or Touracous of Africa. These are closely allied to the Cuckoos, but have the feet only semi-zygodactyle, the fourth toe not being fully directed backwards as in the True Cuckoos. In habits and mode of nesting they also differ greatly from Cuckoos, and are, moreover, entirely confined to the Ethiopian Region.

The Family *Cuculidæ*, which is co-equal in extent with the Sub-order, as defined above, contains six Sub-families,



Left foot of a Cuckoo (*Eudynamis cyanocephala*), to show the arrangement of the plantar tendons. [From the Catalogue of Osteological Specimens in the Museum of the Royal College of Surgeons.] *F.H.*, *Flexor longus hallucis ; F.P.*, *Flexor perforans digitorum.*

viz., the True Cuckoos (*Cuculinæ*), found all over the world, the Lark-heeled Cuckoos (*Centropodinæ*), distributed over the tropical portions of the Old World, the Bush Cuckoos (*Phœnicophæinæ*), inhabiting the tropics in Africa, India, and the

Indo-Malayan Sub-region, and the three Sub-families *Neomorphinæ*, *Diplopterinæ*, and *Crotophaginæ*, which are only to be met with in the tropics of the New World. In the British Islands we have only to deal with the first of these Sub-families.

THE TRUE CUCKOOS. SUB-FAMILY CUCULINÆ.

These chiefly differ from the other members of the Family in their long and pointed wing, showing that they are birds of strong flight, the majority of the species being migratory, and some, like our Common Cuckoo, traversing enormous distances. In the other Sub-families, such as the Lark-heeled and the Bush Cuckoos, the wing is concave and fits closely to the shape of the body, showing that the birds are not migratory and incapable of sustained flights.

Captain Shelley, the latest exponent of the family, recognises seventeen genera of the *Cuculinæ*, of which three have to be treated of as British.

THE CRESTED CUCKOOS. GENUS COCCYSTES.

Coccystes, Gloger, Handb. Naturg. p. 203 (1842).

Type, *C. glandarius* (*L.*).

Of the eight species composing this genus, five are peculiar to Africa, one is Indian, one inhabits both Africa and India, while the eighth is a migratory bird, which nests in Southern Europe and visits Africa in the winter. All the species have a conspicuous crest of elongated feathers, and have the nasal aperture elongated, so as to form a linear oval.

I. THE GREAT SPOTTED CUCKOO. COCCYSTES GLANDARIUS.

Cuculus glandarius, Linn. Syst. Nat. i. p. 169 (1766); Seebohm, Br. B. ii. p. 386 (1884).

Coccystes glandarius, Newton, ed. Yarr. Br. B. ii. 408 (1881); Dresser, B. Eur. v. p. 219, pl. 300 (1874); B. O. U. List Br. B. p. 84 (1883); Saunders, Man. p. 279 (1889); Shelley, Cat. B. Brit. Mus. xix. p. 212 (1891).

Oxylophus glandarius, Lilford, Col. Fig. Br. B. pt. xvi. (1890).

Adult Male.—General colour above ashy-brown, with white tips to the quills and the upper tail-coverts; crown of head pale grey; on the sides of the neck a broad collar of buff; under surface of body white, with a tinge of buff on the throat and fore-neck; under wing-coverts buff; bill blackish, with the base of the lower mandible pale yellow; feet leaden-grey; iris dark brown. Total length, 16 inches; culmen, 1·2; wing, 8·5; tail, 8·8; tarsus, 1·3.

Adult Female.—Similar to the male, but with a good deal of chestnut on the quills, which appears to vanish with age, so that there is at last no difference between the sexes, beyond that the female is a little smaller. Total length, 15 inches; wing, 7·7.

Young.—Resembles the adult, but always has the greater part of the quills chestnut; the throat is darker and more rufous, and the fore-part of the head is black.

Range in Great Britain.—Has occurred twice in the British Isles, once in Ireland in 1842, when a specimen was caught alive in March of that year. It was found in an emaciated condition on the Island of Omey, off the coast of Connemara. Mr. Howard Saunders says that the specimen, which is now in the Museum of Trinity College, Dublin, is in immature plumage, which fact accounts for the caution of his statement, that it was captured *probably* in March 1842. A second example is in the Newcastle Museum, and was shot near Bellingham in Northumberland on the 5th of August, 1870.

Range outside the British Islands.—Principally a Mediterranean species, arriving in Southern Spain early in March and leaving in the first days of August. It has occurred accidentally in Northern Germany, Southern France, and Northern Italy, and to most of the Mediterranean countries, as far east as Asia Minor, it is a regular visitor. Its farthest eastern range appears to be Northern Persia. It is a resident bird and nests in Egypt and North-western Africa, but the only known breeding place within strictly European limits, is the southern half of Spain, where Mr. Howard Saunders has found it nesting as far north as Madrid. It is also a visitor to the Canary Islands. In winter it migrates to Senegambia and the Gold Coast, and also visits Southern Africa.

Habits.—Like the other members of this Family, the Great

Spotted Cuckoo feeds entirely upon insects. It is parasitic upon various species of Magpies and Crows, sometimes even placing its egg in the nest of a Raven. Magpies, however, and occasionally the Blue-winged Magpie (*Cyanopolius cyanus*) are its most frequent victims, and Mr. Saunders says that he has found four Cuckoo's eggs deposited in a Magpie's nest along with six of the rightful owner's. Lord Lilford, who has given an excellent account of the habits of the present species, says that the greatest number of Cuckoo's eggs found by him in one next was eight, with five of a Magpie. "In almost every case in which we found eggs of both species together, the Cuckoo's eggs were more advanced towards hatching than those of the rightful proprietor of the nest." The voice of the male bird is said by Mr. Saunders to be a harsh "*kark-kark*," and that of the female to be like the words "*burroo-burroo*" rapidly repeated.

Nest.—None; the bird being parasitic, as described above.

Eggs.—Although bearing some resemblance to those of the Magpie, the eggs of the Great Spotted Cuckoo can be told by their elliptical shape, and by the smoother texture of their shell. The ground-colour is pale greenish-blue, with spots of brown, and underlying purplish-grey spots; in some cases the spots are evenly distributed over the egg, while in others they are collected round the larger end, imitating the Magpie's egg in the frequent possession of a zone. The eggs of the Great Spotted Cuckoo vary considerably in size, as will be seen by the measurements. Axis, 1·25–1·4 inch; diam., 0·95–1·05.

THE TRUE CUCKOOS. GENUS CUCULUS.

Cuculus, Linn. Syst. Nat. i. p. 168 (1766).

Type, *C. canorus* (L.).

The True Cuckoos have no crest, and are distinguished further by their rounded nostril, which is surrounded by a swollen membrane. The wings and tail are long, and the latter is fan-shaped.

They are found in nearly every country of the Old World, some of them, like our Common Cuckoo, inhabiting the temperate regions of the north during summer, and migrating southwards in the autumn, while in some of the tropical countries the species remain all the year round.

I. THE COMMON CUCKOO. CUCULUS CANORUS.

Cuculus canorus, Linn. Syst. Nat. i. p. 165 (1766); Macgill. Br. B. iii. p. 109 (1840); Newt. ed. Yarr. Brit. B. ii. p. 387 (1880); Dresser, B. Eur. v. p. 199, pl. 299 (1878); B. O. U. List Br. B. p. 83 (1883); Seebohm, Br. B. ii. p. 378 (1884); Saunders, Man. p. 277 (1889); Shelley, Cat. B. Brit. Mus. xix. p. 245 (1891); Lilford, Col. Fig. Br. B. pt. xviii. (1891).

(*Plate XXXIII.*)

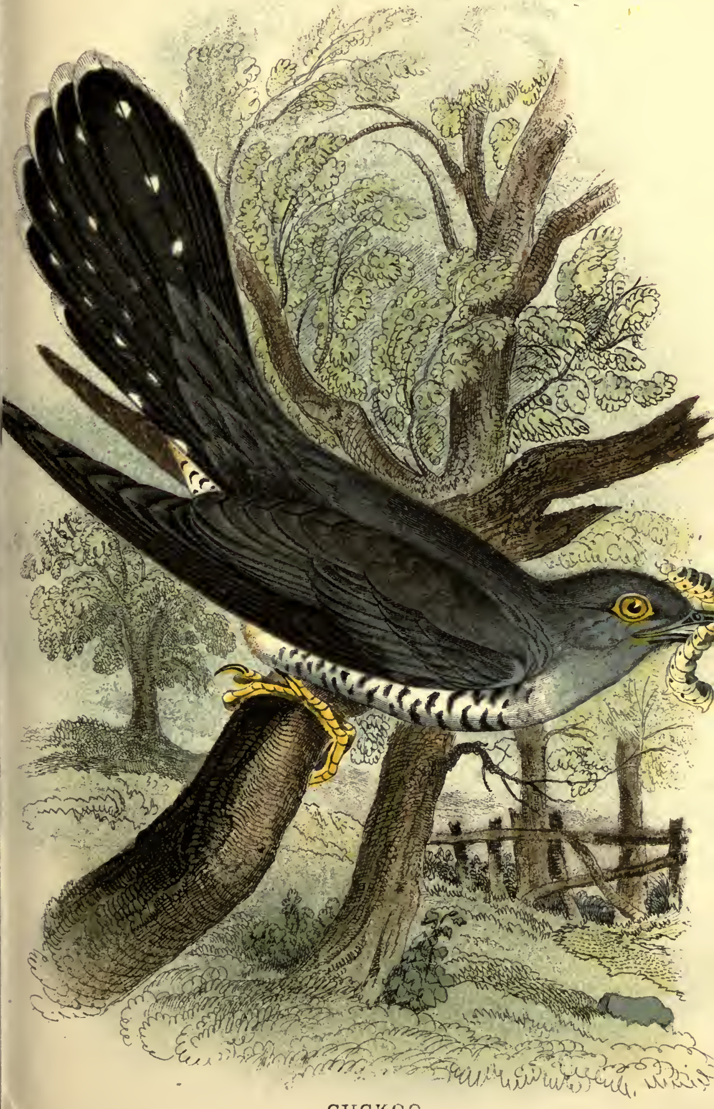
Adult Male.—General colour above leaden-grey, with a slight greenish gloss, the upper tail-coverts with white edges and bars; quills dark brown, with white notches on the inner webs; tail-feathers slaty-black, with white ends; on each side of the shaft twin spots of white, the inner webs notched with white, but no complete bars across the feathers; sides of face and throat rather lighter grey than the head; remainder of under surface of body white, regularly barred with black, with a tinge of buff on the abdomen and under tail-coverts; axillaries and under wing-coverts barred with black; bill black, light yellow at the base of the lower mandible; feet yellow; iris yellow. Total length, 14 inches; culmen, 0·9; wing, 8·9; tail, 7·0; tarsus, 0·8.

Adult Female.—Similar to the male, but a trifle smaller, and distinguished by the rufous shade on the fore-neck. Total length, 12·5 inches; wing, 8·3.

Young.—Very different from the adults. Dark brown or ashy-brown, barred with rufous, and with a white edging to the feathers, producing a strongly mottled appearance; on the back of the neck a white spot; under surface of body buffy-white, barred with blackish-brown, more broadly on the throat; tail barred with rufous.

There is also a rufous or "hepatic" phase of plumage in the Cuckoo, which appears to be confined to the young birds only. In this plumage the general aspect of the bird is tawny-rufous or cinnamon, barred with blackish, the bars less distinct or forming only spots on the rump and upper tail-coverts; tail-feathers rufous, tipped with white, before which is a sub-

PLATE X



CUCKOO.

terminal black band, the feathers being irregularly barred with blackish; under surface of body buffy-white, barred with black, the buff colour deeper on the throat. By some naturalists it is supposed that this "hepatic" stage lasts throughout the bird's life, but I have seen specimens moulting from it into the grey plumage of the fully adult bird.

Range in Great Britain.—A summer visitor, arriving in April, somewhat irregularly in some years, when the seasons are backward, and leaving about the end of July. The young birds, however, are later in their departure, and are sometimes seen as late as the middle of September. The males come a few days before the females, and greatly out-number the latter. It visits every portion of the British Islands, and even the outlying isles.

Range outside the British Islands.—The Cuckoo has been known to visit the Færoe Islands, and is found nearly everywhere throughout Europe and Northern Asia to Kamtchatka, but it does not visit the tundras of Siberia, according to Mr. Seebohm. In Norway it extends its range almost to the North Cape, and in the valleys of the Petchora and the Ob it reaches to 66½° N. lat., on the Yenesei to 67°, and in Eastern Siberia it has been recorded from the Stanovoi Mountains (62° N. lat.) by Middendorf. It breeds throughout the Mediterranean countries, but is chiefly known as a migrant, and the same may be said of it in India, as only a few breed in the Himalayas. I saw it not uncommonly at Simla in the summer of 1885.

The winter home of the Cuckoo extends throughout the African continent, as it occurs at that season on the Gold Coast, and it is also found in South Africa. Throughout the whole of the Indian Peninsula it likewise extends in winter, and even reaches Australia.

Habits.—The natural economy of the Cuckoo is of such an extraordinary nature, that a whole volume could easily be written on the life-history of this curious and interesting bird. The peculiar facts connected with its breeding are worthy of a prolonged study, and there is doubtless much still to be discovered respecting the behaviour of the bird during the breeding-season. That there is a great predominance in the number of males over that of the females which visit this country, is now an admitted fact, and the constant following of the female bird by several of the opposite sex, not only allows of no opportunity for pairing for life, but takes away every possibility of her having time to build a nest. That the Cuckoo is polyandrous seems to be equally certain, and the note of the female is also different from that of the male, which is the bird which utters the well-known "Cuckoo" call. The female's, on the other hand, is a "whittling" or "water-burbling" cry, unlike that of any other British bird, and, when uttered, is quite sufficient to set all the male Cuckoos calling for some distance round. The flight of the Cuckoo is very similar to that of a Hawk, and the appearance of one on the wing is the signal for its being mobbed by Swallows, Martins, and other small birds, just as if it were really a Bird of Prey. Whether the smaller species really mistake it for a Hawk, or really recognise it as a common enemy which brings disaster at times on their progeny, one can hardly say, but that its Accipitrine character is useful to the Cuckoo can hardly be doubted, as will be seen from the narrative which Mrs. Fraser has given of a singular occurrence which came under her notice.

This lady had found a Stonechat's nest, and was engaged in painting a picture in its vicinity, when she saw a female Cuckoo fly down to the ground with an egg in its bill. At the same moment the male Cuckoo swooped down near the Stonechats, when the foolish little birds at once flew to attack it and drive it from their nest, and pursued it for some distance, during which interval the female Cuckoo quietly approached the nest and dropped her egg into the latter. She then uttered her peculiar call, and was immediately joined by the male, and both birds flew off together in triumph.

The Cuckoo, having laid her egg, carries it about in her bill and places it in the nest which she selects as a suitable one for the well-being of her youngster when it is hatched. To the fact that Cuckoos have been shot with an egg in their mouth is no doubt due the myth that the bird devours eggs, no one having, apparently, surmised that the egg which the bird was carrying *might be its own!* Having deposited the egg, it is generally supposed that the old female takes no further interest in its offspring, and certainly it would appear that, by their earlier departure, the adult Cuckoos leave their young to find their way south by themselves. They are, however, by no means the only birds which act thus.

The history of the young Cuckoo in the nest of the foster-parents is that, being hatched about the same time as the young of the rightful occupant, the interloper, while still blind and in an apparently helpless condition, manages to hoist the other little blind nestlings over the side of the nest, so that they perish, and it endures to receive the unremitting care of the pair of small birds, in whose nest the mother Cuckoo may have placed her egg. This story was first related by Dr. Jenner, to whom we owe the discovery of vaccination, and we have heard that some "anti-vaccinationists" have carried their fanaticism so far, that, from their dislike of the founder of the practice of vaccination, they would wish to throw doubts on the authenticity of Dr. Jenner's observations on the habits of the Cuckoo! Some few years ago, however, the proceedings of the young Cuckoo, in ejecting from the nest its young foster-brothers and sisters, were observed by Mrs. Hugh Blackburn, who sketched the operation. We do not know whether the anti-vaccinationists wish to accuse this lady of an untruthful record, but they will scarcely be inclined to doubt the evidence of the late Mr. John Hancock, who also was a witness to the method of the young Cuckoo in ejecting the other occupants of the nest (Tr. North. and Durham Nat. Hist. Soc. viii. pt. 2, pp. 210-217, 1886). The fanatics may not even be satisfied with this evidence, but it will be sufficient for every ornithologist.

The small size of the egg laid by the Cuckoo, considering the bulk of the bird, is another peculiar feature in its economy. Great diversity of colour, also, is one of its characteristics, and considering the various types of eggs laid by the Cuckoo, it is not wonderful that the theory exists that the bird places its egg in the nest of a species, the eggs of which most resemble its own in colour. That there is great truth in this theory I firmly believe, otherwise it would be difficult to account for the fact that blue Cuckoo's eggs should be placed in the nest of a Redstart, which likewise lays blue eggs. In the British Museum are such clutches of eggs, and also blue eggs placed in the nest of a Pied Flycatcher, the eggs of which are also blue. The fact of the Cuckoo producing a blue egg was for some time doubted in England, though well-known in Germany; but the question was set at rest by two English ornithologists, Mr. Henry Seebohm and Mr. H. J. Elwes who, were collecting together in Holland, and who received a nest of Redstart's eggs, one of which, larger than the rest, was said to be that of a Cuckoo. The eggs proved to be hard-set, with well-formed young inside They were alike blue in colour, but on trying to blow the larger egg, the foot of the little bird —a zygodactyle foot—protruded from the hole, and effectually proved that the tiny occupant was a veritable Cuckoo.

In England the most common victims are the Pied Wagtail, the Reed-Warbler, and the Meadow Pipit; and in each case there is a remarkable similarity in colouring of the Cuckoo's egg to that of the foster-parent which she selects. It is supposed that the coloration of the Cuckoo's egg is an hereditary faculty, and that each female Cuckoo lays a particular type of egg. This is in all probability the case, and Cuckoos which lay blue eggs come of a stock which has been hatched from blue eggs, and will continue to lay them, and deposit them in the nest of some blue-egg-laying species.

Among the various types of Cuckoo's eggs in the collection of the British Museum are many which are exact copies of the eggs of other birds. In some instances the likeness is truly remarkable, and it is curious to see the large egg lying in the nest by the side of the smaller ones of the rightful parent, precisely similar in colour, but double the size, looking in fact, like a double-yolked egg of the species. In the above-named collection are Cuckoo's eggs showing the exact colour and markings of the eggs of the birds victimised by the parasitic bird—Pied Wagtail's, Yellow Wagtail's, Blue-headed Wagtail's, Meadow-Pipit's, Tree-Pipit's, Skylark's, Chaffinch's, Reed-Warbler's, Sedge-Warbler's, Orphean Warbler's, &c. But these eggs are not always deposited in the nests of the species where the eggs of the foster-parent exactly resemble those of the interloper. In none of the Hedge-Sparrow's nests, for instance, have we a blue Cuckoo's egg, and it is curious to find an egg like that of a Skylark or a Tree-Pipit deposited in the nest of a Marsh-Warbler or a Chiff-chaff, the eggs of which are so differently coloured that the sombre Cuckoo's egg lies in striking contrast, and it is wonderful that the little owners of the nest do not detect the fraud. This dissimilarity in the colour of the Cuckoo's egg probably arises from the fact that the bird cannot find at the time a nest ready for its reception, and is, therefore, obliged to put it into the first nest where there are freshly-laid eggs, which will ultimately be hatched at the same time as the young Cuckoo, and therefore allow the latter the opportunity of turning out its little nest-fellows, and receive the entire attention of the two foster-parents, who find all their time taken up in feeding the voracious youngster. A striking instance of the above fact was noticed by my friend, Mr. C. Bygrave Wharton, who observed a female Cuckoo haunting the vicinity of his grounds at Totton in the New Forest for some days. He at length discovered a Cuckoo's egg in the nest of a Sedge-Warbler, and, beyond the larger size of the egg, there was absolutely nothing to distinguish the egg of the Cuckoo from those of the rightful owner. Some five days afterwards he found an egg of the Cuckoo of the same "Sedge-Warbler" type, but this time in the nest of a Reed-Bunting, whose eggs were, of course, of a wholly different pattern. This seemed to show that the egg laid by the Cuckoo was like that of the Sedge-Warbler, and that on the first occasion the bird had found a nest ready to hand, but, in the case of the second egg, no Sedge-Warbler in the neighbourhood had a nest ready, and therefore the Cuckoo was forced to put it into the nest of the Reed-Bunting. Such instances could no doubt be multiplied, but, as we have before hinted, the natural history of our Common Cuckoo is such a complex subject that a book might easily be written about the bird and its peculiar habits.

That the Cuckoo lays its eggs at intervals has long been believed, but Dr. Rey, a well-known German oologist, has recently given his opinion that the interval between the deposition of the eggs is much shorter than is generally supposed, and that a single female will lay from seventeen to twenty-two eggs! Much has been surmised as to whether the old Cuckoos take any interest in their offspring after it is hatched, but Professor Newton writes, "of the assertion that the Cuckow* herself takes any interest in the future welfare of the egg she has foisted on her victim, or of its product, there is no evidence worth a moment's attention." It is certain that the young Cuckoos are left to find their way south in the autumn entirely by themselves, the old birds having left long before, and in the British Museum are three birds shot by myself on the same day within a quarter of a mile of the same spot, which must have been migrating south in company.

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* Professor Newton always calls the bird the "Cuckow," which is the form "of the more scholarly English ornithologists, as Montagu and Jenyns" (cf. Dict. B. p. 118). The bird itself, however, says "Cuck*oo*," and even the above learned writer admits that the oldest English spelling of the name seems to have been "*Cuccu.*"

The food of the Cuckoo appears to consist entirely of insects, and it is a true friend of the farmer and gardener, especially as it is believed to be the only kind which devours the larvæ of the Tiger-Moth—the "Woolly Bear," as it is generally called. Most birds decline to eat this creature, but the stomach of the Cuckoo has been found completely lined with the hairs from off this caterpillar's body.

Nest.—None; the bird being parasitic.

Eggs.—Variable to an extraordinary degree, as described above.

THE AMERICAN CUCKOOS. GENUS COCCYZUS.

Coccyzus, Vieill. Analyse, p. 28 (1816).

Type, *C. americanus* (L.).

The American Cuckoos have much the same form as the ordinary True Cuckoos of the Old World, but are rather plainer in colour, without bars on the under surface of the body, and have the nostril oval in shape. They also make nests, and are not parasitic, as far as is known.

Two species have wandered to Europe, but they can only be regarded as occasional visitors, of accidental occurrence.

The members of the genus *Coccyzus* occur throughout the greater part of the New World, visiting the temperate regions of North America in summer, and occurring throughout tropical America as far south as the Argentine Republic, but not visiting the extreme south of the South American continent.

I. THE YELLOW-BILLED CUCKOO. COCCYZUS AMERICANUS.

Cuculus americanus, Linn. S. N. i. p. 170 (1766).

Coccyzus americanus, Macg. Br. B. iii. p. 137 (1840); Dresser, B. Eur. v. p. 227, pl. 301, fig. 2 (1876); Newton, ed. Yarr. ii. p. 414 (1881); B. O. U. List Br. B. p. 84 (1883); Seebohm, Br. B. ii. p. 390 (1884); Saunders, Man. p. 280 (1889); Shelley, Cat. B. xix. p. 308 (1891).

Adult Male.—Above brown, glossed with olive on the mantle; tail black, tipped with white, except the centre feathers, which are like the back; quills externally brown and also brown at the ends, internally rufous; eyebrows greyish; ear-coverts rather darker brown; cheeks and under-surface of body white; under wing-coverts white, tinged with buff. Bill dark horn-colour, paler below the nostrils, the lower mandible for the most part orange-yellow; feet leaden-grey; iris dark brown. Total length, 11 inches; culmen, 1·1; wing, 5·5; tail, 6·0; tarsus, 1·0.

Adult Female.—Similar to the male in colour. Total length, 10·8 inches; wing, 5·6.

Range in Great Britain.—A purely accidental visitor. Four instances of its occurrence have been recorded: in co. Cork, in the autumn of 1825; near Dublin, in 1832; near Aberystwith, in October, 1870; and on Lundy Island, in October, 1874. It has also been obtained in Belgium, and in Italy near Turin.

Range outside the British Islands.—Found principally in the Eastern United States, eastward to the Missouri Plains, breeding as far south as Texas, and extending on the west to California, though Mr. Ridgway considers the western bird to be distinct, and names it *C. occidentalis*. It also occurs in the West Indian Islands and breeds there.

Habits.—Very similar to those of our own Cuckoo, but differing from that species in the habit of building its own nest, rearing its own young, and being an affectionate parent. According to Wilson, it begins to pair early in May, and commences to build its nest about the 10th of that month, retiring to some shady and retired woodland for that purpose. There seems to be, even with this well-behaved parent, the same difference in time between the deposition of the eggs as is to be found in the case of *Cuculus canorus*. Audubon relates that he found a nest in which were five young Cuckoos and two eggs. Two of the young birds were sufficiently advanced to scramble out of the nest, and the other three were of different ages, one being just hatched, another several days old, and the third still further advanced, covered with "pen"-feathers, so that it would have been able to fly in about a week. His friend Mr. Rhett, in whose garden this nest was found, assured him that he had known as many as eleven young Cuckoos to be reared in a nest in the course of one season. The late Dr. Brewer says that the breeding-season lasts from one to four months, so that it will be seen that the nesting-habits of the American Cuckoo differ strikingly from those of their European cousins.

Nest.—In the construction of this, little art is displayed. It is made of a few sticks and twigs without any perceptible concavity, and has a few green weeds and apple-blossoms intermixed.

Eggs.—Uniform light bluish-green, which rapidly fades, even in a cabinet, according to Dr. Brewer. Axis, 1·2–1·3 inch; diam., 0·9–1·0.

II. THE BLACK-BILLED CUCKOO. COCCYZUS ERYTHROPHTHALMUS.

Cuculus erythropthalma, Wilson, Am. Orn. iv. p. 16 (1811).
Coccyzus erythrophthalmus, Dresser, B. Eur. v. p. 231, pl. 301, fig. 1 (1876); B. O. U. List Br. B. p. 85 (1883); Saunders, Man. p. 280 (1889); Shelley, Cat. B. xix. p. 311 (1891).

Adult Male.—Similar to *C. americanus*, but distinguished by the narrow white tips to the tail-feathers, which have a black sub-terminal band. There is no chestnut lining to the quills, which have only a little rufous-buff colour at the base; bill black, with sometimes a little yellow at the base of the lower mandible; feet leaden-grey; iris dark brown. Total length, 11 inches; culmen, 0·9; wing, 6·0; tail, 6·5; tarsus, 0·95.

Adult Female.—Similar to the male. Total length, 10·8 inches; wing, 4·8.

Range in Great Britain.—Has occurred once near Belfast, in September, 1871. Another example has been obtained near Lucca in Italy, in 1858.

Range outside the British Islands.—According to Mr. Ridgway, this species inhabits the Eastern United States, as far north as Labrador and west to Manitoba and the Rocky Mountains, visiting in winter Central America, the West Indies, and the northern part of South America.

Habits.—Very similar to those of *C. americanus*, excepting that the bird is perhaps even more shy and retiring in its ways. Like the last-named bird, it builds its own nest, and is a most affectionate parent. Dr. Brewer tells of an instance where the female had been killed, and the male bird successfully brought up the brood of five young ones.

Nest.—According to Dr. Brewer, the nest is built in an evergreen bush or small sapling. It is rather neatly constructed of twigs, occasionally lined with moss, withered catkins, or blossoms of plants.

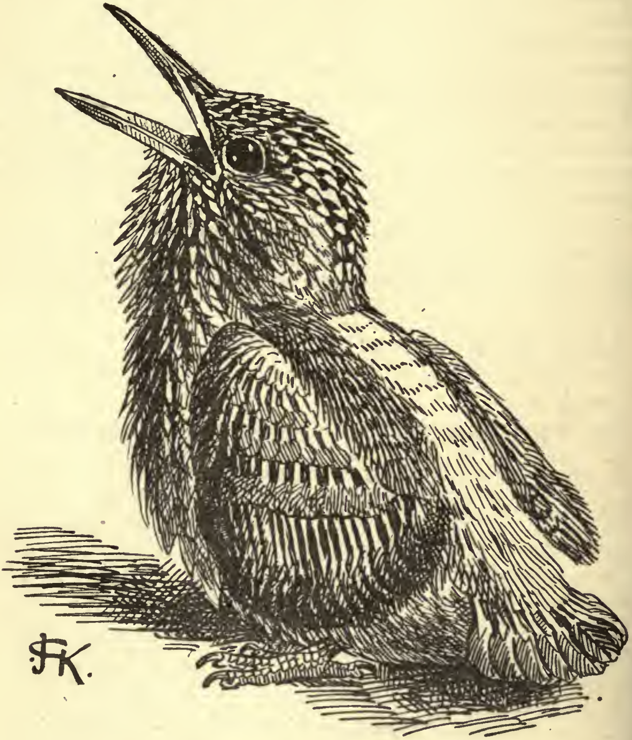
Eggs.—Glaucous-green or verditer-blue. Axis, 1·11; diam., 0·78 inch (*Ridgway*).

THE PICARIAN BIRDS. ORDER CORACIIFORMES.

In this Order are comprised several Sub-orders of birds, most of which are inhabitants of the Tropics, and do not immediately concern us here. Such are the Guacharos (*Steatornithes*), the Frog-mouths (*Podargi*), the Madagascar Rollers (*Leptosomati*), the Hornbills (*Bucerotes*), the Mot-mots (*Momoti*), the Todies (*Todi*), the Humming-Birds (*Trochili*), and the Colies (*Colii*). All these Sub-orders have remarkable characteristics, and contain, as a rule, but few species, which represent the various Sub-orders in the Tropics of both the Old and New Worlds.

All the Picarians differ from the Passerine Birds in the arrangement of the tendons of the foot, the *flexor perforans digitorum* being connected with the hallux.

As a rule they lay white, or at least uniform pale-coloured eggs, which are always hidden from sight in the hole of a tree, or under the shelter of a building or rock. The young are born naked, and, as far as is known, the form of development of the feathers is peculiar, the feather remaining long in its sheath, so that a young Picarian is covered soon after its birth with an array of pen-feathers. As soon as these have reached a development which makes the youngster look like a small Porcupine, the sheath breaks and falls off, and the feathers cover the body at once.



Young Kingfisher, to show the pen-feathers.

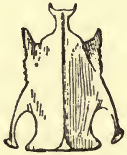
THE SWIFTS. SUB-ORDER CYPSELI.

The Swifts and the Night-Jars have generally been associated in recent classifications of birds with the Humming-Birds, as forming an Order *Machrochires*. The association of the Swifts with the Swallows as joint members of the Order *Fissirostres* has long been recognised as a mistake, the Swallows being aberrant *Passeriformes*, and the Swifts being really aberrant *Picariæ.* They are, however, the most Passerine of the Picarian birds, as they have a distinctly Passerine, or ægithognathous, palate; in other respects they are Picarian, though in many points they are aberrant members of the Order.

In some form or other, Swifts are found nearly all over the world, except in the high north and the extreme south. Where no true Swifts occur, as is the case in some of the Pacific Islands, their place is taken by the edible Swiftlets (*Collocalia*), those curious little cave-haunting birds, which make the nests so highly prized by the Chinese and others for the manufacture of bird's-nest soup. In Borneo these caves are leased for the purposes of revenue, those which are frequented by *Collocalia fuciphaga*, which makes the purest white nest, being of more value than those inhabited by *C. linchii* or by species which make "black" or "moss" nests, these not being so useful for culinary purposes. These are, however, birds of the Tropics, and in the British Islands we have but to notice three species, one, *Micropus apus*, a regular summer visitor, one, *M. melba*, of rare occurrence, and one, *Chætura caudacuta*, a very rare visitor, of accidental occurrence only.

THE TRUE SWIFTS. FAMILY CYPSELIDÆ.

The Swifts are remarkable for their very wide gape, the mouth being cleft to below the level of the eyes. The wing, although so powerful in flight, has less feathers in its composition than the bulk of Passerine Birds, for there are only ten primaries, while the secondaries are less than nine in number, but the quills are all very strong and pointed, so that no birds on earth exceed the *Cypselidæ* in their power of flight. That of our Common Swift is rapid enough, but this is nothing when compared with the lightning-like rapidity with which some of the Spine-tailed Swifts (*Chætura*) traverse space. I remember one Indian experience in particular, when we stopped for the night at Solon, on the road to Simla, arriving there just as twilight was approaching. While dinner was preparing, I stood outside on the road, looking over that wonderful Himalayan scenery which I am never likely to see again, the tremendous mountains above and the deep valley below, with the setting sun illuminating the glorious peaks of the hill-tops, and throwing into shade the depths lying below my feet. I was conscious of an occasional buzz of wings past my face, and soon discovered that the roof of the Dâk Bungalow was tenanted by a colony of the small Indian Swift (*Micropus affinis*), who were dashing out every moment with the speed of an arrow, or perhaps one might say, with the velocity of a rifle-bullet. I had no gun with me—if I had, it would have been useless,—but I marked the holes whence the birds came forth, and armed myself with a butterfly-net. It is needless to tell anyone who has seen these birds in flight that I did not catch one of them. The fast approaching darkness, which hindered my vision, served to sharpen that of the birds, which easily avoided me, but I shall never forget the pace at which the little creatures darted out from beneath the roof of the house and whizzed past. When I had turned my head they were half-a-mile away over the valley, giving just a glimpse of the white band on the rump, which enabled me to detect to which species they belonged. I am informed by some of my Anglo-Indian friends that the flight of *M. affinis* is as nothing compared with that of a *Chætura*, to which the term of "greased lightning" can easily be applied.



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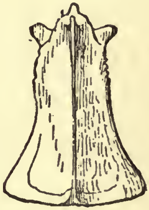
Sternum of
Hirundo rustica.



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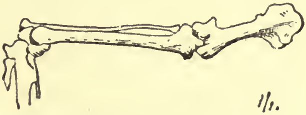
Sternum of
Micropus apus.

In addition to the characteristic rapidity of their flight, the Swifts further differ from the Swallows, with which they have been associated by so many writers, in having only ten tail-feathers instead of twelve. The breast-bone is very small, and has a high keel, indicative of a powerfully-developed pectoral muscle, and the hinder margin is one-notched.

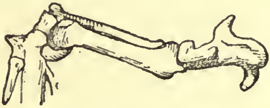
Then, again, the bones of the wing in the Swift are peculiar, the humerus being very short, the fore-arm being longer, and the bones of the manus extremely long.

These are some of the most striking differences between the Swifts and the Swallows, and there are numerous others which have been described by Parker, Shufeldt, Lucas, Ridgway, and other competent anatomists. In their ægithognathous palate there is strong fundamental evidence that they cannot be placed far from the Passerine Birds in the natural system, and the Swallows are doubtless their nearest allies in the latter Order.



Wing-bones of *Hirundo rustica.*

Mr. Ernst Hartert, who is the latest exponent of the classification of the *Cypselidæ* (Cat. B. Brit. Mus. xvi. pp. 434-518), divides the Family into three Sub-families: the *Cypselinæ*, or True Swifts, with feathered toes and only three phalanges to the outer and middle toes; the *Chæturinæ*, or Spine-tailed Swifts, with the toes unfeathered, and four phalanges to the outer and middle toes, the tail short and exceeded by the wings; and finally, the Tree Swifts (*Macropteryginæ*), with a long forked tail, not exceeded by the wing. It is not, however, necessary to enter further into the differences of the three



Wing-bones of *Micropus apus.*

groups of *Cypselidæ*, as, in a work on "British Birds," only the True Swifts concern us directly, the Spine-tailed Swifts very little, and the Tree Swifts, which are exclusively tropical, not at all.

THE TRUE SWIFTS. SUB-FAMILY CYPSELINÆ.

The characters of this Sub-family, as detailed above, are the feathered toes, and the presence of only three phalanges in the outer and middle toes.

THE TYPICAL SWIFTS. GENUS MICROPUS.

Micropus, Meyer und Wolf, Taschenb. i. p. 280 (1810).

Type, *M. apus* (L.).

In this genus the toes are very strong, without feathers, and all four are directed forwards, the same interval dividing each toe from its neighbour.

The typical Swifts are principally birds of the Old World. Two species only occur in South America, in the Andes of Ecuador, Peru, and Bolivia, and these species appear to descend to lower levels in winter and to visit Argentina, but over the whole of Brazil and Amazonia the genus is unrepresented, while in North America its place is taken by the Pied Swift (*Aeronantes*). In Europe and Asia the Swifts are summer visitors, not breeding far north, and leaving for their winter quarters very early in the autumn. A considerable number of resident species are found in Africa, which is also the winter home of our two British species.

I. THE WHITE-BELLIED SWIFT. MICROPUS MELBA.

Hirundo melba, Linn. S. N. i. p. 345 (1766).
Cypselus melba, Macg. Br. B. iii. p. 611 (1840); Dresser, B. Eur. iv. p. 603, pl. 269 (1874); Newton's ed. Yarr. ii. p. 372 (1874); B. O. U. List, p. 74 (1883); Seebohm, Br. B. ii. p. 297 (1884); Saunders, Man. p. 253 (1889).
Micropus melba, Hartert, Cat. B. xvi. p. 438 (1892).

Adult Male.—Distinguished by its large size and white abdomen. General colour above mouse-brown, darker on the wings and tail; under surface of body white, with a band of dark brown across the chest, the feathers composing it being narrowly edged with white; under tail-coverts and marginal under wing-coverts also edged with white; flanks brown and edged with white, before which is a sub-terminal bar of darker brown; bill black; feet dull flesh-colour; iris dark brown. Total length, 8·5 inches; culmen, 0·5; wing, 8·45; tail, 2·5; outer feathers, 3·5; tarsus, 0·6.

Adult Female.—Similar to the male. Total length, 8·3 inches; wing, 8·3.

Young.—Similar to the adults, but having white fringes to the brown feathers.

Range in Great Britain.—Of accidental occurrence only, though it has been recorded more than twenty times. In Scotland it has not yet been noticed, but has occurred in Ireland once, a specimen having been captured near Dublin, in March, 1833. The other instances of its capture have taken place between the months of June and October.

Range outside the British Islands.—A regular summer visitor to the Alps of Southern Europe, wandering occasionally to Northern France, Germany, and Heligoland. Mr. Howard Saunders states that the species nests in the cliffs of Nolay on the western frontier of Burgundy, as well as in the Vosges and Savoy. In Switzerland it is a well-known species, and its range extends through the mountains of South-eastern Europe as far east as Persia and the Himalayas. Its winter home appears to be in Northern and North-eastern Africa, and it extends also over the whole of the Indian Peninsula and Ceylon. In Eastern and Southern Africa its place is taken by a resident species, *M. africanus*, which has been generally supposed to be the same as *M. melba*, but it is now separated as a distinct species by Mr. Hartert.

Habits.—This large Swift is a conspicuous feature of the localities it inhabits, and is particularly to be noticed round the Cathedral at Berne, which is tenanted by a large colony of these birds every summer. They arrive in that town in April, and, like other Swifts, often suffer from hunger and cold, if the weather happens to be inclement, and Dr. Fatio and Professor

Studer say that many perish, as, of course, the supply of insects, on which these birds entirely depend, fails them. The nest is a rough structure, formed of many materials, all of which are procured by the Swifts on the wing, as the short feet and long wings of the bird prevent its rising when once it gets on the ground, and so it is often captured when benumbed with cold. Thus the nest is composed of earth procured from the crevices of rocks, leaves, paper, feathers, &c., all the materials being glued together into a compact mass by means of the birds' own saliva. The eggs are laid before the nest is completed, and much of the structure is consolidated by the sitting birds, both male and female sharing the duties of incubation. In their habits the White-bellied Swifts are very regular, issuing forth from their retreats at break of day and foraging for food for some hours, then resting in their homes during the best part of the day, and sallying forth again about five o'clock in the afternoon, and flying about till dark. They are very quarrelsome and irritable in their nature, and make a considerable noise and clatter in the places where they take up their abode.

Eggs.—Generally two in number, but sometimes three or even four, though it is supposed that no female lays more than two eggs. Eggs pure white. Axis, 1·1–1·25; diameter, 0·75–0·8.

II. THE COMMON SWIFT. MICROPUS APUS.

Hirundo apus, Linn. Syst. Nat. i. p. 344 (1766).
Micropus murarius, Meyer und Wolf, Taschenb. p. 281 (1783); Macgill. Brit. B. iii. p. 618 (1840).
Cypselus apus, Dresser, B. Eur. iv. p. 583, pl. 266 (1881); Newt. ed. Yarr. Brit. B. ii. p. 364 (1882); B. O. U. List Brit. B. p. 74 (1883); Seeb. Brit. B. ii. p. 292 (1884); Lilford, Col. Fig. Brit. B. part v. (1887); Saunders, Man. Brit. B. p. 251 (1889).

Adult Male.—Sooty-black with a slight greenish gloss, the forehead slightly whiter; chin dull white, with a few shaft-lines on some of the feathers; under wing-coverts with faintly indicated whitish margins, these being sometimes visible on the under tail-coverts; bill black; feet dark brown; iris dark brown. Total length, 7 inches; culmen, 0·3; wing, 6·7; centre tail-feathers, 1·7; lateral ones, 2·9; tarsus, 0·35.

Adult Female.—Similar to the male. Total length, 6·6 inches; wing, 6·4.

Young.—Similar to the adults, but browner, the forehead whiter, and the feathers having whitish edgings.

Range in Great Britain.—A common summer visitor to England and Scotland, but rarer and of more irregular occurrence in the north and west of the latter country. In Ireland, according to Mr. R. J. Ussher, it breeds in every county, sometimes nesting in cliffs.

Range outside the British Islands.—The Swift is distributed in summer over the greater part of Europe, and winters in South Africa and Madagascar. It has been noticed as high as 70° N. lat. in Norway, and has been found breeding at 69° N. lat. Mr. Seebohm says that it is only an accidental visitor to the neighbourhood of Archangel, and is not found higher than lat. 60° N. in the Urals. He also records the species as breeding regularly in Dauria, Mongolia, and North China, but the Swift of these regions is doubtless the pale form called by Swinhoe *Cypselus pekinensis*, a light-coloured eastern race of our Common Swift, which ranges eastward from Sind to North China, and winters to the southward, though it appears also to visit South Africa on its migrations. Another light-coloured form of *M. apus* is the Pallid Swift (*M. murinus*), which visits Egypt and the Mediterranean countries in summer, and extends its eastern range as far as Sind, wintering in South Africa.

Habits.—The Swift is one of our latest arrivals in summer, and one of the first of the migrants to leave our shores. It comes towards the end of April or early in May, and departs in August, though a few belated individuals are seen as late as the end of September on our southern coasts, and even later records of its stay have been established. Its approach northward is very gradual, for whereas the first arrivals make their appearance in the South of Europe in March, it is not till April that they appear in Central Europe, and in the more northern parts of their range, such as Lapland, they are not seen till

June. Many succumb from cold and subsequent starvation, from arriving too early, before the frosts have quite left us.

As a rule the Swifts are most active towards the evening, when they fly about in parties, dashing round the houses or towers in which their nests are placed, screaming vociferously in concert. Their food consists entirely of insects, which are seized upon the wing. Nevertheless, at certain times, the Swift may be seen hawking over the low ground, over a river, or high in the air, even in the brightest sunshine, so that it is evident that the daylight does not deter it from issuing forth from its recesses, though it is undoubtedly in the twilight that the bird is most active.

The short legs of the Swift incapacitate it from walking on the ground, and its long wings are obviously in the way; but it is a mistake to suppose that the bird can never rise from the earth, as the contrary has been proved. It is, however, never seen to settle voluntarily on the ground for the purpose of collecting material for its nest, as can always be observed in the case of the Swallows and the Martins. From the situations in which it builds its nest or in which it roosts, it can always shuffle to the openings and launch itself into the air.

Nest.—A rough structure of straws and like material, mixed with a few feathers and wool, and cemented together by the saliva of the bird. It is sometimes placed in the crevice of a cliff or building, or at the protected base of a spout, but is more often placed under the roof of some building.

Eggs.—Pure white, of an elongated oval shape. Generally two in number, often three, and more rarely four, the texture of the shell being always more rough than in the eggs of the Swallows. Axis, 0·95–1·05; diam., 0·65–0·7.

THE SHORT-TAILED SWIFTS. SUB-FAMILY CHÆTURINÆ.

This Sub-family contains a number of species, mostly tropical in their habitat. They have the toes with the usual four joints, and the tarsi bare of feathers. The tarsi are long, equalling the length of the middle toe, but the tail is very short, and scarcely forked at all. The wings, on the other hand, are extremely long, and project far beyond the tail.

In the Sub-family *Chæturinæ* are included the edible Swifts (*Collocalia*), which might very well be separated as a separate Sub-family, on account of their peculiar nesting-habits. Mr. Hartert includes them with the *Chæturinæ*, though they have not spiny tail-feathers.

The Short-tailed Swifts are found in most parts of the world, but do not extend very far north, especially in the Old World.

THE NEEDLE-TAILED SWIFTS. GENUS CHÆTURA.

Chætura, Steph. Gen. Zool. xiii. pt. 2, p. 76 (1826).
Type, *C. pelagica* (Linn.).

The members of this genus vary very much in size, and include both the largest and some of the smallest Swifts. They can, however, always be told by the stiffened shafts of the tail-feathers, the points extending beyond the tip of the tail and presenting the appearance of spines.

The geographical range of the genus includes nearly the whole of America from north to all but the extreme south. In the Old World, species are found from Amoorland in Eastern Siberia south to India, and the Malayan Region to Australia, as well as the whole of Africa below the Sahara.

I. THE NEEDLE-TAILED SWIFT. CHÆTURA CAUDACUTA.

Hirundo caudacuta, Lath. Ind. Orn. Suppl. ii. p. 57 (1801).
Acanthyllis caudacuta, Dresser, B. Eur. iv. p. 613, pl. 270 (1880); Newton, ed. Yarr. ii. p. 371, note (1874); B. O. U. List, p. 74 (1883); Saunders, Man. p. 255 (1889).
Chætura caudacuta, Seebohm, Br. B. ii. p. 303 (1884); Hartert, Cat. B. xvi. p. 472 (1892).

Adult Male.—Of large size. Upper surface of the body pale brown, shading off into lighter brown on the lower back, the rump with white bases to the feathers; upper tail-coverts black, glossed with steel-blue; wings and tail black, with a gloss of green or steel-blue, very distinct on the upper wing-coverts, the innermost secondaries conspicuously paler, whitish on the inner webs; crown and nape, as well as the sides of the head, glossy blackish-brown; forehead and lores white; under surface of body sooty-brown, with white bases to the feathers of the lower abdomen and lower flank-feathers, the latter being glossy blue-black; throat white; vent and under tail-coverts also white; under wing-coverts blackish-brown, with a slight metallic gloss; bill black; feet brown. Total length, 8 inches; culmen, 0·35; wing, 8·2; tail, 2·3; tarsus, 0·6.

Adult Female.—Similar to the male, but slightly smaller.

Young.—Similar to the adults, but with less white on the forehead, and to be distinguished by some brownish spots on the under tail-coverts.

Range in Great Britain.—A rare and occasional visitor, having only been met with on two occasions, both in the middle of summer. One was shot at Great Horkesley, near Colchester, on the 8th of July, 1846, and another towards the end of July, 1879, near Ringwood in Hampshire. In the latter case, two were observed flying for some days over the River Avon. The species has not been obtained anywhere else in Europe, and the Needle-tailed Swift is apparently one of those birds which, for some reason or other, sometimes wanders westward, out of the ordinary course of its migrations.

Range outside the British Islands.—The breeding range of this species extends from the neighbourhood of Krasnoyarsk in Siberia eastwards to Amoorland and South-eastern Mongolia, as well the northern islands of Japan. In winter it migrates by way of China to Australia.

Habits.—Very similar to those of our Common Swift. It arrives in its northern quarters about the end of April or the beginning of May, and departs in August, a few staying on till September. On migration vast flocks are often seen. Its powers of flight are prodigious, and it is often noticed at a great height in the air. It also visits the lowlands in the vicinity of the mountain fastnesses in which it breeds, and is there noticed hawking over the ground in company with other Swifts.

THE NIGHT-JARS. SUB-ORDER CAPRIMULGI.

These birds, familiarly known as Goat-Suckers, have much similarity to the Swifts as regards their structure, but differ from them in many points of anatomy. One great difference, however, is seen in the character of the nestlings, which are covered with down. The palate is generally said to be "schizognathous," but in *Caprimulgus* it seems to be ægithognathous (see *infrà*), and basipterygoid processes are present. In the character of the plumage they differ entirely from the close-set, hard feathering of the Swifts, and are remarkable for the soft and delicate nature of their body-feathers, which are like those of the Owls, and even resemble the latter in their zig-zag markings and spots. They are almost all crepuscular birds, coming out to seek their food in the twilight, though they can fly very fairly in the daytime, but do not willingly take flight unless disturbed.

The Night-Jars are distributed all over the world, except in the extreme north and south, and they are also absent in the islands of the Pacific Ocean.

There are two families, the True Night-Jars (*Caprimulgidæ*) and the Moth-plumaged Night-Jars (*Nyctibiidæ*), the latter being only found in Tropical America.

THE TRUE NIGHT-JARS. FAMILY CAPRIMULGIDÆ.

Distinguished by their pectinated middle claw, which has a comb-like edge. Only four phalanges are found in the outer toe. The gape is very wide, and when the mouth is opened, the extent is enormous, and in most cases is beset with a number of strong, spiny bristles.

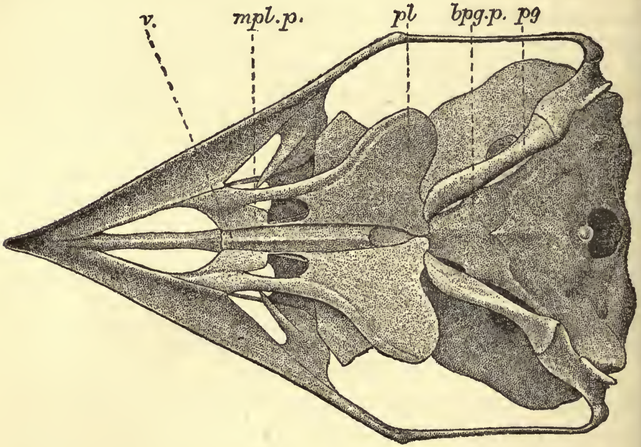
The range of the Family extends nearly all over the globe, with the exceptions above stated. It contains about eighteen genera, some of which are beautifully decorated and carry long streamers in the wings and tail, or have other ornamental plumes during the breeding-season.

THE TRUE NIGHT-JARS. GENUS CAPRIMULGUS.

Caprimulgus, Linn. Syst. Nat. i. p. 346 (1766).

Type, *C. europæus* (Linn.).

In these birds the skull is ægithognathous, with the vomer truncated in front, and basipterygoid processes are present. The spinal feather-tract is well defined on the neck, but is forked on the back, as in the Swallow. A hind-toe is always present, and is connected with the *flexor perforans digitorum*. The mouth is widely split, the gape opening to behind the eye, and is furnished with strong bristles. As a rule in this Family, the sexes are very much alike in colour, but the male has a white spot on the primaries and at the end of the outer tail-feather, this being replaced in the female by a fulvous spot. The wing is very long and pointed. The young are covered with down, and are helpless for some time after birth, being fed by their parents.



Ventral aspect of cranium of *Caprimulgus europæus* (enlarged) to show the vomer. Letters as before. [From the Catalogue of Osteological Specimens in the Royal College of Surgeons.]

Night-Jars are found over almost the entire surface of the globe, the species which visit the northern temperate regions being strictly migratory; but in the Tropics a large number o resident species are found, and are met with everywhere, except in the extreme south of South America and the islands o Oceania.

I. THE COMMON NIGHT-JAR. CAPRIMULGUS EUROPÆUS.

Caprimulgus europæus, Linn. S. N. i. p. 346 (1766); Macg. Br. B. iii. p. 633 (1840); Newton, ed. Yarr. ii. p. 377 (1874); Dresser, B. Eur. iv. p. 621, pl. 271 (1875); B. O. U. List Br. B. p. 75 (1883); Seebohm, Br. B. ii. p. 309 (1884); Saunders, Man. p. 257 (1889); Hartert, Cat. B. Brit. Mus. xvi. p. 526 (1892); Lilford, Col. Fig. Brit. B. part xxii. (1892).

Adult Male.—Mottled all over, the general colour of the upper surface being dark ashy-grey, with darker brown vermiculations, taking the form of broad lanceolate spots on the crown; the nape streaked with dull ochraceous-buff; on the scapulars some longitudinal streaks of black and ochraceous-buff; wing-coverts spotted with the latter colour; primary quills blackish, with rufous-buff spots on both webs; the three outer primaries with a large rounded spot of white on the inner web; the two outer tail-feathers with a large white spot, about an inch long, at the tip; throat blackish-brown, narrowly barred with rufous-brown and spotted with white; breast coloured like the upper surface; abdomen fulvous, barred with blackish-brown, these bars less distinct on the under wing- and tail-coverts, which are rather more rusty; bill black; feet reddish-brown; iris black. Total length, 10·5 inches; culmen, 0·55; wing, 7·8; tail, 5·5; tarsus, 0·75.

Adult Female.—Similar to the male, but having the white spots on the primaries and outer tail-feathers replaced by spots of ochreous-buff, which have also a few brown specks upon them. Total length, 10·5 inches; wing, 7·5.

Young.—Resemble the adults, but are rather duller in colour and have the spots on the primaries and outer tail-feathers ochreous-buff, as in the old female.

Nestling.—Covered with down of a greyish shade, darker above and paler below.

This species is distinguished by the white or buff spots on the inner web of the primaries and at the ends of the outer tail-feathers, and by the absence of a distinct rufous collar round the hind-neck.

Range in the British Islands.—A regular summer visitor, arriving about the middle of May and leaving in September, though, according to Mr. Howard Saunders, it will sometimes remain "in the mild south-west of England" until November. It is found throughout the United Kingdom in summer, ranging to the far north of Scotland, but occurring only as a straggler in the Orkneys, Shetlands, and the outer Hebrides. In Ireland, Mr. R. J. Ussher records it as breeding in most of the counties, but being more scarce in the north and west.

Range outside the British Islands.—Extends over the whole of Europe, being found as far north as 60° N. lat. in Scandinavia, and reaches about 50° N. lat. in the Ural Mountains and the Valley of the Yenesei. Mr. Seebohm believes that it does not extend farther east than Irkutsk. Its winter home is in South Africa, where it is met not uncommon. It may also extend as far as Persia in summer, but the species which inhabits this country and Central Asia is a paler form of the Night-Jar, known as *Caprimulgus unwini*, which apparently winters in North-western India.

Habits.—Although it may occasionally be flushed during the day from the place where it is resting, the Night-Jar is a bird of the twilight, and only comes out of its own accord in the gloaming. Its favourite haunts are the districts covered with fern and bracken, but it also frequents park-land, and I have more than once started one from the open road. Its mottled plumage tends to conceal it so effectually, when on the ground, that it would be impossible to perceive it even in broad daylight, and it is only in the evening that the Night-Jar is in evidence. Seated lengthwise on a bough, or on the top of a post, the bird utters its "churring" note—a sound, once heard, never to be forgotten—and it is one of the most characteristic noises of a summer night. It is from this peculiar vibrating call that the Night-Jar has got the popular name of "Churn"-Owl in some parts of the country. When flying it has also a call-note, somewhat Owl-like, very well rendered in Mr. Seebohm's book as *co-ic*, *co-ic*. This it utters when flying, and it is accompanied by a kind of cracking noise, which is apparently produced by striking its wings together over its back, after the manner of a Wood-Pigeon. Often when on a moth-hunting expedition in St. Leonard's Forest, in Sussex, my nightly round to the trees at the bottom of a little valley has been enlivened by the aërial gambols of the Goat-Suckers above my head, and I have heard the bird make the sound very distinctly, and seen it in the air at thirty or forty yards' distance, silhouetted against the sky. It always seemed to arrest its flight for an instant, as if the wings were clapped together over the back, and I have noticed the same hesitation when the bird makes the noise, as it often does, after rising from the ground. The "churring" notes are decidedly ventriloquial, and are given out with great power. The late Mr. Frederic Bond told me that he was once "sugaring" for moths in Windsor Forest, and as it was too early to commence his rounds, he sat down against the foot of a tree to rest, and dropped off to sleep, when he was awakened suddenly by a din which startled him nearly out of his wits for the moment. A Night-Jar had settled on a neighbouring bough, and had commenced to "churr." The food of the Night-Jar consists almost entirely of insects, and it devours large numbers of cockchafers and beetles. Mr. Seebohm says that it eats slugs, and Macgillivray found that it also devoured caterpillars. Whether the large bristles which beset the gape are of use to it in catching its prey is not known for certain, and they are probably only an extreme development of this feature, which is found, in a greater or less degree, in all fly-catching birds. Certain it is that some Night-Jars, with similar habits to our own species, are almost devoid of these rictal bristles. Another puzzling character found in the Night-Jar is the pectinated claw on the middle-toe, and it is extremely difficult to imagine the use of this comb-like appendage. It has been suggested that it is of use to the bird in retaining a firm hold on the bark of the trees, when it sits along a bough. Another use for the comb has been suggested in the cleaning of the long rictal bristles from the debris of the moths and beetles on which the bird feeds. Dr. Günther, who had some young Night-Jars for some time in confinement, tells me that the only use which he found the birds to make of this pectinated claw was to scratch the surface of a chair or sofa on which they were sitting. Thus it may be a useful appendage in scratching or distributing the earth for the purpose of seeking its food.

Nest.—None; the eggs being laid in a slight depression of the earth, which becomes a little more evident as the period of incubation progresses.

Eggs.—Only two in number, of a peculiar shape, being equally rounded at either end, like those of Swifts, and still more like those of Sand-Grouse. They are very light in colour, being pure white, or creamy-white, with two kinds of markings or spots. The underlying ones are of a violet-grey colour, and always visible, while the distinctive spots are brown, either light or dark, and distributed over the egg in different ways, either as spots, or large blotches, or lines. Axis, 1·2–1·35 inch; diameter, 0·85–0·95.

II. THE ISABELLINE NIGHT-JAR. CAPRIMULGUS ÆGYPTIUS.

Caprimulgus ægyptius, Licht. Verz. Doubl. p. 59 (1823); Dresser, B. Eur. iv. p. 629, pl. 272 (1877); Seebohm, Hist. Br. B. ii. p. 315 (1884); Saunders, Man. Br. B. p. 260 (1889); Hartert, Cat. B. Brit. Mus. xvi. p. 562 (1892).

Adult Male.—Very pale in colour, isabelline and sandy-buff, with blackishmarkings pronounced on the head and again on the scapulars, where they are larger; quills deep brown, externally spotted or banded with brownish-buff, the inner webs notched with white for some distance, but not quite reaching to the shaft; tail-feathers like the back, but banded with black, the outer feathers becoming more uniform near the tips; under surface of body very pale, with two distinct spots of white on the throat; abdomen pale sandy-isabelline, with narrow bars of blackish, which disappear on the lower abdomen, but are again distinct on the under tail-coverts; bill dark brown; feet reddish-brown; iris black. Total length, 10·5 inches; culmen, 0·55; wing, about 8; tail, 5·1; tarsus, 0·8.

Adult Female.—Similar to the male. Total length, 10·6 inches; wing, 8·5.

Young.—Similar to the adults, but rather more rufous.

Characters.—Distinguished from *C. europæus* by its paler coloration, and by the pattern on the inner web of the primary quills, these being indented with white.

Range in Great Britain.—An accidental visitor, having occurred only once, a specimen having been recorded from Mansfield in Nottinghamshire by Mr. Whitaker. It was shot there on the 23rd of June, 1883. It is by no means an unlikely bird to occur in England, as it evidently wanders westward, on occasions, from its eastern home. One specimen has been obtained in Heligoland, three in Malta, and one in Sicily.

Range outside the British Islands.—The home of this species is in the desert countries of Northern Africa from Algeria to Egypt and Nubia. Thence it ranges to the Caspian, and eastwards to Turkestan and Afghanistan. Its occurrence within European limits is, as mentioned above, purely accidental. It appears to winter in N. E. Africa.

Habits.—With the exception that the Isabelline Night-Jar is a bird of the deserts, it is very similar in habits to our common species, passing the day in retirement, when its sandy-coloured plumage, assimilating to the ground around it, doubtless affords the bird entire protection from observation. Those travellers who have observed the species in North-eastern Africa, have remarked that several individuals are generally seen together, but this is probably during the season of migration only. Captain Shelley procured four males together in March, and he thinks that the sexes, in all probability, migrate in flocks. This is very likely, as Von Heuglin also remarks that the specimens which he shot out of large flocks of fifty proved to be all females.

Nest.—None; a depression being formed in the sand or under the shade of a bush.

Eggs.—Two in number, very similar to those of our Common Night-Jar, but smaller, and with the ground-colour creamy-yellow.

III. RED-NECKED NIGHT-JAR. CAPRIMULGUS RUFICOLLIS.

aprimulgus ruficollis, Temm. Man. Orn. p. 438 (1820); Newton, ed. Yarr. ii. p. 386 (1874); Dresser, B. Eur. iv. p. 633, pl. 273 (1874); B. O. U. List Br. B. p. 75 (1883); Seebohm, Br. B. ii. p. 317 (1884); Saunders, Man. Br. B. p. 259 (1889); Hartert, Cat. B. xvi. p. 531 (1892).

Adult Male.—General colour above sandy-grey, mottled and spotted with black; the markings on the scapulars large and well-developed, being longitudinal, like the accompanying buff markings; wing-coverts with bright fulvous spots; quills deep brown, with chestnut spots and bars, the three outer primaries having a large white spot on the inner web, this being sometimes visible on the fourth; the three outer tail-feathers with a large white spot at the end, an inch or an inch and a half in depth; crown mottled with longitudinal black spots, bordered with rufous-buff; round the hind-neck a broad collar of golden- or rufous-buff; throat like the upper surface, with two large white patches, and with broad blackish bars on the fore-neck; abdomen buff with brown bars, the under tail-coverts more uniform. Bill blackish-brown; feet dull brown; iris black. Total length, 12 inches; culmen, 0·5; wing, about 8·0; tail, 6·7; tarsus, 0·7.

Adult Female.—Similar to the male, and having the white spots on the primaries and tail-feathers as in that sex. Total length, 12 inches; wing, 8·0.

Young.—Paler in colour than the male, the black markings less pronounced, and the white spots on the quills and tail-feathers less strongly indicated.

Characters.—Distinguished from our Common Night-Jar by its larger size and by having a white spot on the primaries and tail-feathers in both sexes. As in *C. europæus*, the inner webs of the primaries are not uniform in colour, but it may be at once recognised by the broad rufous collar on the hind-neck.

Range in Great Britain.—An accidental visitor only, one having been killed at Killingworth, and examined by the late Mr. John Hancock in the flesh on the 6th of October, 1856.

Range outside the British Islands.—The Red-necked Night-Jar is an inhabitant of Southern Spain, where it comes every summer and breeds. It has also been obtained in Languedoc and Provence in the south-east of France, as well as in Malta and Dalmatia. It probably winters in the oases of the Sahara but its exact winter habitat has not yet been discovered, nor has it yet been found in West Africa.

Habits.—Mr. Howard Saunders, who is well acquainted with the species in Southern Spain, says that there is nothing distinctive about its food and habits. In the southern half of the Spanish Peninsula it "frequents the cool chequered shade of the woods during the greater part of the day."

Eggs.—Similar to those of *C. europæus*, but rather larger and more boldly marked. Axis, 1·2–1·3 inch; diam., 0·9–1·0.

THE BEE-EATERS. SUB-ORDER MEROPES.

This is a group of birds confined to the Old World. Five genera are recognised, all very similar in structure, appearance, and habits, the birds being generally of bright coloration, with a curved bill, and long wing and tail. The latter is sometimes forked, sometimes square, but in the typical species the middle tail-feathers are elongated.

The palate is bridged or desmognathous, and there are no basipterygoid processes present. The breast-bone has four notches on its hinder margin, and the episternal process is perforated so that the foot of each coracoid meets through this opening: as a rule in birds the coracoids are kept apart at the base by this process. This is a singular character, found in Game-Birds, and also in the Hoopoes and Hornbills. The feet are syndactyle or gressorial, the sole being flat and the toes united together, as in the Kingfishers and other groups of birds, which were formerly united under the name of "Fissirostres," or "Wide-gaping Birds," of which the Bee-Eaters were always reckoned a component Family. The fourth toe is united to the third as far as the last joint, the second toe being united to the middle one for the basal joint only. The tail-feathers are only ten in number.

The bill is long and gently decurred, both mandibles following the same direction at the tip.

The Bee-Eaters are, as a rule, resident birds in the countries in which they live. Africa possesses the greatest number of species, but those which range into the temperate portions of the Northern Hemisphere are migratory, and only appear in summer, and then never go very far north. Species are found in most of the tropical portions of the Old World, and range south to the Malay Archipelago and Australia.

THE TRUE BEE-EATERS. FAMILY MEROPIDÆ.

There are no Sub-families among the Bee-Eaters, and consequently the whole of the five genera admitted by ornithologists are placed under the heading of the *Meropidæ*, the Family characters being the same as those of the Sub-order, given in detail above.

THE LONG-TAILED BEE-EATERS. GENUS MEROPS.

Merops, Linn. Syst. Nat. i. p. 182 (1766).

Type, *M. apiaster*, L.

As most of the Bee-Eaters have the tail square or slightly forked, it is very easy to recognise a member of the genus *Merops* by the elongated central feathers of the tail, these being produced beyond the other tail-feathers, and somewhat pointed. About seventeen species of *Merops* are known to science, and they are distributed over Africa, India, and Australia, and extend to the temperate portions of Europe and Northern Asia.

I. THE COMMON BEE-EATER. MEROPS APIASTER.

Merops apiaster, Linn. S. N. i. p. 182 (1766); Macg. Br. B. iii. p. 685 (1840); Dresser, B. Eur. v. p. 155, pl. 295 (1877); Newton, ed. Yarr. ii. p. 435 (1874); B. O. U. List Br. B. p. 82 (1883); Seebohm, Br. B. ii. p. 321 (1884); Lilford, Col. Fig. Br. B. part ix. (1888); Saunders, Man. Br. B. p. 273 (1889); Sharpe, Cat. B. Brit. Mus. xvii. p. 63 (1892).

Adult Male.—Crown of head and hind-neck chestnut, this colour overspreading the mantle and gradually disappearing on the scapulars and back, which are creamy-buff; lower back washed with blue; the upper tail-coverts entirely pale blue; forehead white, followed by a line of blue, which unites with a narrow eyebrow, which is first blue, and then shades off into green; the crown separated from this blue eyebrow by a green shade; lesser wing-coverts green, the rest of the coverts light chestnut, like the secondaries, which have black tips; primary quills blue, blackish towards the tips, the inner secondaries green, bluish towards their ends; tail-feathers green, edged with blue, the centre ones blue, greener near the base; lores and a streak through the eye black, like the ear-coverts; cheeks blue in front, white behind; throat bright yellow, with a black band across the lower throat; under surface of body greenish-blue; the under wing-coverts and axillaries ochreous-buff, washed with green along the edge of the wing; quills dusky below, ochreous buff along the inner web; bill black; feet greyish-brown; iris lemon-yellow or red. Total length, 10 inches; culmen, 1·65; wing, 5·7; tail, 4·5; tarsus, 0·35.

Adult Female.—Like the male, but often washed with green on the head and back. Total length, 9·5 inches; wing, 5·9.

Young.—Much paler in colour than the adults, and having the under surface of the body much greener, and wanting the black bar across the lower throat; the eyebrow green; the upper-parts coloured as in the adults, but much greener, and having a wash of pale green over the whole, including the light parts of the back and scapulars.

Range in Great Britain.—A rare visitor to the south of England, generally occurring in spring. Mr. Howard Saunders states that over thirty instances have been recorded "south of Derbyshire in England and Pembrokeshire in Wales." In Scotland and the south of Ireland the Bee-Eater has also been noticed on a few occasions, but the bulk of the captures have taken place in England.

Range outside the British Islands.—The Common Bee-Eater visits the whole of Southern Europe in spring, and extends eastwards to Central Asia, Afghanistan, and Cashmere. It breeds throughout the whole of this range, and winters to the southward, visiting Sind, and the extreme north-western districts of the Peninsula of India, as well as the countries of the Persian Gulf. It extends its migrations throughout the whole of Africa, and even reaches the Cape Colony, where it is said to breed a second time.

Habits.—This is one of the most brightly coloured birds of Europe, and its brilliant plumage renders it so conspicuous that there is little chance of its escaping observation on the rare occasions when it visits this country. In Spain it arrives during the last days of March and early in April, and Colonel Irby states that, near Gibraltar, Bee-Eaters pass in great numbers from the 10th to the 14th of the latter month, generally flying high in the air, almost out of sight, seldom stopping or descending near the ground. They cross the Straits for the most part early in the day, flight following flight for hours in succession, always exactly in the same direction, due north. The latest date on which Colonel Irby noticed a flight going north was the 7th of May. The return migration takes place early in the year, about the end of July and the early part of August, the 29th of August being the latest day on which a Bee-Eater was seen by the above-named observer.

The Bee-Eater commences to nest directly after its arrival, and the eggs are laid about the second week in May, some time being occupied in excavating the tunnels, at the end of which the nesting-chamber is excavated. Some of these are of great length, extending for some eight or nine feet in the banks of rivers, and Colonel Irby states that the bills of the birds become much worn away by the process of boring, but grow again to their normal length in course of time. The holes are sometimes drilled into the ground "in a slightly vertical direction, or into an elevated mound," when no suitable river-banks are available for their work. Generally the birds nest in large colonies, but occasionally only a few holes are found together, and Colonel Irby says that vast quantities of eggs and young birds must annually be devoured by Snakes and Lizards. The habits of the Bee-Eater also render it an object of detestation to the peasantry, as the birds swoop down in the vicinity of the hives and carry off numbers of the bees, so that, as Mr. Howard Saunders records, "sacks-full of birds are taken in Spain by spreading a net over the face of an occupied bank, and pouring water into a parallel trench cut at some distance back." It is as well, therefore, that the Bee-Eater does rear a second brood far away in South Africa, for it has many enemies in its northern home, and none greater than its own beautiful plumage, which causes it to be frequently in demand as an ornament (!) for ladies' hats. "During my stay at Gibraltar," writes Colonel Irby, "Bee-Eaters decreased very much in the neighbourhood, being continually shot on account of their bright plumage to put in ladies' hats. Owing to this vile fashion, we saw no less than seven hundred skins, all shot in Tangier in the spring, which were consigned to some dealer in London."

The food of the Bee-Eater consists entirely of insects, and besides the bees which it devours in such numbers, it also eats quantities of wasps, locusts, and beetles. Its note is a single one, variously rendered by ornithologists as "teerrp" or "quilp."

Nest.—None. A long tunnel is excavated in the ground or in a bank, and the eggs are deposited in a chamber at the end, on the bare soil.

Eggs.—From five to six in number; pure white, glossy, and nearly round. Axis, 1·05 inch; diam., 0·9.

II. THE BLUE-TAILED BEE-EATER. MEROPS PHILIPPINUS.

Merops philippinus, Linn. S. N. i. p. 183 (1787); Saunders, Man. p. 274, note (1889); Sharpe, Cat. B. Brit. Mus. xvii. p. 71 (1892).

Merops philippensis, Hancock, Cat. B. Northumb. p. 28 (1874); Newton, ed. Yarr. ii. p. 442, note (1874).

Adult Male.—General colour above green, the mantle and scapulars being of the same colour as the back; lower back, rump, and upper tail-coverts blue; no white on the forehead or eyebrow, the former having a narrow line of blue; tail blue; bill black; feet blackish; iris scarlet. Total length, 11·3 inches; culmen, 1·8; wing, 5·3; tail, 3·5; middle tail-feathers, 5·0; tarsus, 0·45.

Adult Female.—Similar to the male. Total length, 11·5 inches; wing, 5·15.

Characters.—Distinguished from *M. apiaster* by the green, not chestnut, mantle, the green scapulars, the blue tail, and by the yellow throat being succeeded by a shade of chestnut; there is also no black band in the fore-neck.

Range in Great Britain.—Has occurred on one occasion near Seaton Carew, in Northumberland, in August, 1862. It is extraordinary that this species should have wandered to England, but the occurrence is vouched for by Mr. John Hancock, one of the most conscientious ornithologists which this country has ever produced, and must, therefore, be accepted.

Range outside the British Islands.—An Indian species, inhabiting the whole of the Indian Peninsula and Ceylon, and extending eastwards through the Burmese countries and Siam to Southern China. It is further distributed through the Malayan Peninsula and Archipelago to the Philippine Islands, Java, Sumatra, Borneo, Timor, and Celebes.

Habits.—These resemble those of the Common Bee-Eater, and as the species is not likely ever to occur in Great Britain again, a few words only are necessary on this subject. According to Mr. Hume, it "breeds from March to June, pretty well all over Continental India, in well-cultivated and open country. Like all the rest of the Family, it nests in holes in banks. The holes are rarely less than four feet deep, and sometimes extend to seven feet. In diameter they vary from two to two and a half inches."

Nest.—None as a rule, but sometimes the chamber has a thin lining of grass and feathers, not seen in the nesting-place of any other of the Indian Bee-Eaters.

Eggs.—Four or five in number; pure white, glossy, and nearly round. Axis, 0·82–0·97 inch; diam., 0·67–0·85.

THE HOOPOES. SUB-ORDER UPUPÆ.

The Hoopoes have a bridged, or "desmognathous," palate, and, like the Bee-Eaters, have the anterior process of the sternum, or breast-bone, perforated, so as to receive the feet of the coracoid bones. The sternum has two notches on its posterior margin. The oil-gland is tufted; there are no blind intestines or cæca, and the spinal feather-tract is forked in the upper back; of the plantar tendons, the *flexor perforans digitorum* is split into three branches, leading to the second, third, and fourth digits, but not to the first, and the hind aspect of the tarsus (*planta tarsi*) is scaled transversely, as in the Larks. It is evident, therefore, that the Hoopoes have marked Passerine affinities, but they are also allied to the Hornbills (*Bucerotes*), which they resemble in another curious feature. The nest is placed in the hole of a wall or of a tree, and the female is fed by the male during the period of incubation, though she is not plastered in by her husband, as is the case with the Hornbills.

The Hoopoes may be divided into two Families, the True Hoopoes (*Upupidæ*) and the Wood-Hoopoes (*Irrisoridæ*). The latter are peculiar to the forest- and bush-districts of Africa, and have a good deal of metallic colour in their plumage. The tail is very long and wedge-shaped, and the nostril has a well-developed operculum, or shelf, to it.

THE TRUE HOOPOES. FAMILY UPUPIDÆ.

This Family contains but a single genus, *Upupa*, with five species, all very much resembling each other in appearance. They have an erectile crest, shaped like a compressed fan and ornamented with a sub-terminal bar of black. The bill is long and slender and decurved towards the end. The other principal characters will be found under the heading of the Sub-order.

THE HOOPOES. GENUS UPUPA.

Upupa, Linn. Syst. Nat. i. p. 183.

Type, *U. epops*, Linn.

Of the five species known to science, the Common Hoopoe has the widest distribution in Europe, South-eastern and North-western Africa, eastwards to China and Japan, as well as the Peninsula of India, in the southern portion of which its place is taken by the Indian Hoopoe (*U. indica*), which extends throughout the Burmese countries to Southern China and Hainan. In Somali-land a distinct species, *U. somalensis*, occurs, and in Madagascar *U. marginata* takes the place of our European bird. The fifth species, *U. africana*, is found over South Africa, and extends to the Congo on the west and to Zanzibar on the east; it is a smaller and more richly-coloured bird, and has no white band on the primaries.

I. THE COMMON HOOPOE. UPUPA EPOPS.

Upupa epops, Linn. S. N. i. p. 183 (1766); Macg. Br. B. iii. p. 41 (1840); Dresser, B. Eur. v. p. 179, pl. 298 (1871); Newton, ed. Yarr. ii. p. 419 (1874); B. O. U. List Br. B. p. 83 (1883); Seebohm, Br. B. ii. p. 334 (1884); Lilford, Col. Fig. Br. B. part vii. (1888); Saunders, Man. p. 275 (1889); Salvin, Cat. B. Brit. Mus. xvi. p. 4 (1892).

Adult Male.—General colour above light brown, the scapulars tipped with buffy-white and crossed with a band of buff, which is broadly edged with black; rump white; primaries black, with a broad band of white, in the form of a spot on the inner web of the first primary, and again on the eighth, ninth, and tenth, where the white bar takes the form of a transverse spot; the external aspect of the wing barred with black and white; head and neck pale vinous-rufous, including the crest, which is a little darker; the crest-feathers tipped with black, before which is a sub-terminal bar, before which, again, is a bar of white, not defined on its junction with the rufous of the rest of the feather; throat and breast also vinous-rufous, the abdomen very pale buff; flank-feathers streaked with blackish along their inner webs; under tail-coverts white; tail black, with a median white bar, which crosses the other feathers diagonally, so as to approach the tip on the outermost pair. Bill blackish, flesh-coloured at the base of both mandibles; feet black; iris brown. Total length, 12 inches; culmen, 2·2; wing, 5·7; tail, 4·0; tarsus, 0·8.

Adult Female.—Similar to the male.

Young.—Like the adults, but a little duller and browner in colour.

Range in Great Britain.—The Hoopoe may be considered a regular spring migrant, and it has occurred in nearly every part of the United Kingdom, including the Orkney and Shetland Isles, as well as the outer Hebrides. If the bird were not so conspicuous an object and so tame, it is almost certain that it would nest regularly in England, and, notwithstanding the fact that a Hoopoe is almost sure to be shot by way of welcome in this country, there is no doubt that it has bred in many of the southern counties of England.

Range outside the British Islands.—Generally distributed throughout Southern Europe, and nesting in the Mediterranean countries, and in Central Europe as far north as Denmark and Southern Sweden. It wanders even to the Færoes and Spitsbergen, and the North of Russia and Norway, but does not breed in these high latitudes. Its eastern range extends throughout Central Asia to China and Japan. It arrives in the south of Europe in the middle of February, and Colonel Irby notes the earliest arrivals near Gibraltar as the 16th to the 18th of that month, though the greater number pass northward in March, returning during August, September, and October. The winter home of the Hoopoe is in Senegambia and North eastern Africa, the Central Asian individuals doubtless wintering in North-western India, and the Chinese and Japanese birds in Southern China.

Habits.—It is a pity that the indiscriminate slaughter of this pretty bird deprives us in this country of an opportunity of seeing the Hoopoe in a state of nature, for it is admitted by everyone who has had that privilege as being a very graceful bird in its movements and ways, particularly, says Mr. Howard Saunders, "at the time of courtship, when the bird struts about with crest erect, uttering a note resembling a soft *bu-bu* (whence the Spanish term *Abubilla*), or *hoop-hoop*, to which, and not to its crest, it owes its English and French names."

The nest is placed in the hollow of a tree, and in some countries of Europe the bird has disappeared or become reduced in numbers, owing to the cutting down of old timber.

To look at a Hoopoe, one could scarcely imagine a more neat and cleanly-looking bird, and yet its nesting habits are often disgusting. The material of which the nest is composed is of the slightest, but it is surrounded by ordure of some kind, which, according to Mr. Howard Saunders' experience in Spain, "causes an intolerable stench, which is subsequently increased by the droppings of the female and young." In China, according to Mr. Swinhoe it is known by the name of "Coffin-Bird," as it breeds in the holes of exposed Chinese coffins, and Pallas relates his finding a nest in the chest of a decaying corpse.

The Hoopoe feeds on insects and worms, boring in the ground with its long bill for the former. It devours a large number of worms and insects of various kinds, beetles, caterpillars, grasshoppers, &c. It is said that the bird always throws up its food into the air and catches it in its bill, before swallowing it, a very Hornbill-like habit, and one which has a bearing on the relationship of the Hoopoes to this Family.

For my own part, I have no doubt as to the relationship of the Hoopoes with the Hornbills, and another remarkable feature is common to the two families. Just as the male Hornbills feed their females in the nest, so, it would appear, do the Hoopoes. It is true that the male does not plaster the female in the tree, like the Hornbill does, but there is plenty of evidence that the male Hoopoe brings all the food to the female, though the latter occasionally comes out and takes a flight before returning.

The note of the Hoopoe, as observed in China by Swinhoe, "is produced by puffing out the sides of the neck, and hammering on the ground at the production of each note, thereby exhausting the air at the end of the series of three notes, which make up its song. Before it repeats the call, it repeats the puffing of the neck with a slight gurgling noise. When it is able to strike its bill, the sound is the correct *hoo-hoo-hoo*, but when perched on a rope, and only jerking out the song with nods of the head, the notes most resemble the syllables *hoh-hoh-hoh*."

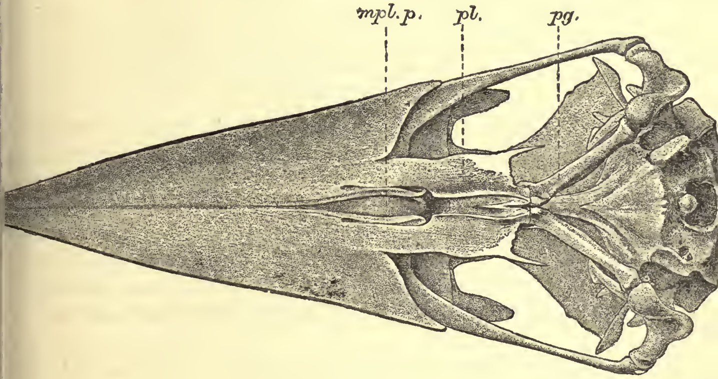
Eggs.—Four to seven in number; grey or greenish-olive or stone-colour, without spots. When first laid, they are of a pale greenish-blue colour, which soon fades. Axis, 0·9–1·1 inch; diam., 0·7.

THE KINGFISHERS. SUB-ORDER HALCYONES.

Birds of ungainly form but mostly of brilliant plumage, the Kingfishers are found in nearly every part of the world. They are most numerous in the Old World, as America possesses but one genus, *Ceryle,* of which the Belted Kingfisher, *Ceryle alcyon*, is the type, but the genus ranges throughout the New World, from the high north even down to Chili.

In the Old World there is scarcely a country that does not possess a Kingfisher of some sort or another, belonging to one of the two types recognised in the Family, which is divided into Fish-eating Kingfishers (*Alcedininæ*) and Insect- or Reptile-eating Kingfishers (*Daceloninæ*). The former have a long thin bill, much compressed, fit for cleaving the water, and generally, but not always, a short rudder-like tail. This is, indeed, by no means an universal characteristic, and among the Insect-eating Kingfishers, there are several which have a short tail like the true *Alcedininæ*, and yet live in forests and never feed on fish.

The palate is bridged, or desmognathous; there are no basipterygoid processes; the hallux, or first hind-toe, is connected with the *flexor perforans digitorum*, and the sole of the foot is flat, the front toes being united together for the greater part of their extent—hence the birds are Anisodactyle.



Ventral aspect of the bill of the Giant Kingfisher (*Dacelo gigas*), to show the desmognathous palate. [From the Catalogue of Osteological Specimens in the Museum of the Royal College of Surgeons.] Letters as before.

The eggs are white and hidden from sight, as with other Picarian Birds, being mostly deposited in the hole of a bank or tree. The young are hatched naked, but the feathers are developed in well-marked lines or "tracts," and are for a long time enclosed in the sheath, imparting a singularly bristly appearance to the nestling (see p. 34).

Of the Insect-eating Kingfishers, of which we have no representatives in the northern parts of the world, the nearest allies to our own Kingfisher are the African genus *Ispidina*, and the Indian and Moluccan genus *Ceyx*, the latter having only three toes. The large genus *Halcyon*, consisting of bush- and forest-frequenting birds, is widely spread over Africa, India, China, and extends even to Australia and Oceania. One species, *Halcyon smyrnensis*, even reaches Asia Minor and Palestine. The beautiful Racket-tailed Kingfishers (*Tanysiptera*) are forest-haunting birds, feeding chiefly on insects, and having long tails like a Bee-Eater or a Racket-tailed Parrot (*Prioniturus*), while the largest of all Kingfishers are the Giants or "Laughing Jackasses" of Australia. These birds feed mostly on reptiles.

THE TRUE KINGFISHERS. FAMILY ALCEDINIDÆ.

The Kingfishers constitute in fact a single Family, co-equal with the Sub-order *Halcyones*, and consequently the characters of the latter are the same as those of the Family *Alcedinidæ*. It is divided into two Sub-families, which are not very strongly characterised, but they may be separated more by their habits than by any structural features. Thus they are divided into *Alcedininæ* and *Daceloninæ*, the latter Sub-family not concerning us here, as no member of it reaches the British Islands.

THE FISH-EATING KINGFISHERS. SUB-FAMILY ALCEDININÆ.

The Kingfishers of this Sub-family are mostly of the type of the British species, *Alcedo ispida*, which is mainly a piscivorous bird, but it likewise embraces the genus *Ceryle*, of which the Belted Kingfisher is the type, as well as the Stork-billed Kingfishers (*Pelargopsis*) of Asia, the Crested Kingfishers (*Corythornis*) of Africa, and the Three-toed Kingfishers (*Alcyone*) of Australia and Malaisia. All of these birds have a narrow, compressed bill, very long and thin, and are almost entirely fish-eaters.

THE BANDED KINGFISHERS. GENUS CERYLE.

Ceryle, Boie, Isis, 1828, p. 316.
Type, *Ceryle rudis* (L.).

The species of this genus are found throughout the New World, as well as in Africa, Asia Minor, and the greater part of tropical Asia, extending throughout the Indian Peninsula and Ceylon to China and Japan, but not penetrating farther than Tenasserim and the Indo-Chinese countries. One peculiar character of the genus *Ceryle* is that the sexes, contrary to the usual rule in Kingfishers, differ in colour, the female possessing an additional band on the breast. The genus differs also from the genus *Alcedo* in having a long tail, in this respect resembling the Stork-billed Kingfishers (*Pelargopsis*) of the Indian Region. The best known species of the genus *Ceryle* is probably the Black-and-White Kingfisher (*Ceryle rudis*), which is a frequent object of interest to the traveller in Palestine and the Nile Valley, where it attracts attention by its habit of hovering in the air, like a Kestrel Hawk.

I. THE BELTED KINGFISHER. CERYLE ALCYON.

Alcedo alcyon, Linn. S. N. i. p. 180 (1766).
Ceryle alcyon, Newton, ed. Yarr. ii. p. 452 (1881); B. O. U. List Br. B. p. 81 (1883); Seebohm, Br. B. ii. p. 348 (1884); Saunders, Man. p. 270 (1889); Sharpe, Cat. B. xvii. p. 125 (1892).

Adult Male.—General colour above slaty-blue, with a well-developed crest of the same colour; round the hind-neck a white collar; wing-coverts spotted with white; quills black, with white tips, the outer webs with white spots, the secondaries externally slaty-blue with white spots; tail also slaty-blue, banded and spotted with white; under surface of body white, with a broad band of slaty-blue across the upper breast, the flanks also mottled with slaty-blue; bill black; feet dark bluish-grey; iris dark brown. Total length, 12 inches; culmen, 2·0; wing, 6·4; tail, 3·2; tarsus, 0·3.

Adult Female.—Differs from the male in having a second band of rusty-red on the breast, below the grey one, the flanks being also rufous. Total length, 11·5 inches; wing, 6·4.

Young Male.—Resembles the old female, and has two bands on the breast like the latter. The second rufous band, however, is narrower than that of the old hen-bird, and the band on the upper breast has a strong admixture of rufous, as well as the flanks.

Young Female.—Resembles the young male, but has always rufous axillaries, and the flanks are rufous like the lower breast-band. The band on the fore-neck has also a good deal of rufous.

Range in the British Islands.—An accidental visitor from North America, of which two examples have been recorded from Ireland, one said to have been obtained in Co. Meath in October, 1845, and another in Co. Wicklow in November of the same year. "No other instances," writes Mr. Howard Saunders, "of the occurrence of this species in Europe is known, nor has it been obtained in Greenland or Iceland," and he deems it inexpedient to admit to the British List "an American bird which—assuming the accuracy of the records—had probably escaped from confinement."

Range outside the British Islands.—The greater part of North America from Alaska southwards, migrating south in winter to Central America and the Greater and Lesser Antilles.

Habits.—All accounts of the life-history of the Belted Kingfisher show that the bird has very similar habits to our own *Alcedo ispida*, nor is its food entirely confined to fish, as it will also eat insects, and even, on occasion, small Mammalia. Like the Pied Kingfisher of Egypt, it also hovers in the air like a Kestrel, as our own Kingfisher sometimes does. The nesting-chamber is excavated by both parents, and the tunnel leading to it is hollowed out by the birds themselves, sometimes to a depth of fifteen feet.

Nest.—None.

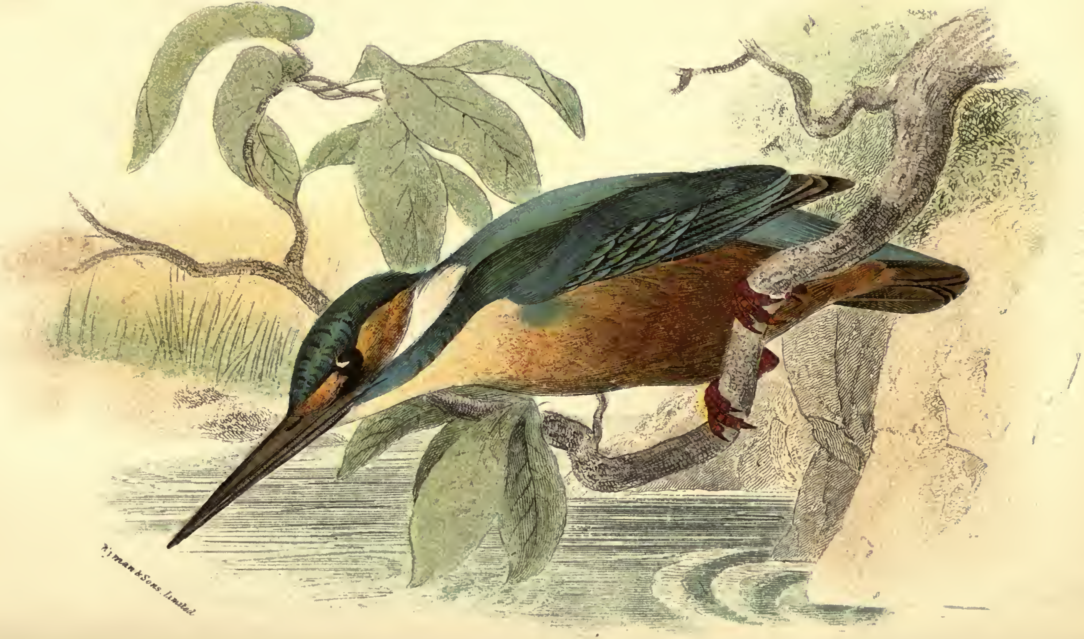
Eggs.—Six in number, more rarely seven; pure white, glossy. Axis, 1·3–1·4 inch; diam., 1·05.

THE BLUE KINGFISHERS. GENUS ALCEDO.

Alcedo, Linn. Syst. Nat. i. p. 178 (1766).

Type, *Alcedo ispida* (L.).

The Kingfishers of this genus are easily recognisable by their short tails and short crests. In the genus *Ceryle* the tail is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KINGFISHER

longer than the bill, in *Alcedo* the bill is much longer than the tail. So it is in the African genus *Corythornis* and the Australian genus *Alcyone*, both of which are fish-eaters, but *Alcyone* has only three toes, and *Corythornis* has a long drooping crest, which distinguishes it at once from *Alcedo*.

I. THE COMMON KINGFISHER. ALCEDO ISPIDA.

Alcedo ispida, Linn. S. N. i. p. 179 (1766); Macg. Br. B. iii. p. 671 (1840); Dresser, B. Eur. v. p. 113, pl. 290 (1875); Newt. ed. Yarr. ii. p. 443 (1881); B. O. U. List Br. B. p. 81 (1883); Seebohm, Br. B. ii. p. 341 (1884); Lilford, Col. Fig. Br. B. part viii. (1888); Saunders, Man. p. 269 (1889); Sharpe, Cat. B. xvii. p. 141 (1892).

(*Plate XXXIV.*)

Adult Male.—General colour greenish-blue, the scapular feathers slightly streaked with brighter blue; the back, rump, and upper tail-coverts, rich cobalt-blue, sometimes, in very old individuals, deep blue; wing-coverts like the back, the median and greater series spotted with greenish-cobalt; bastard-wing, primary-coverts and quills blackish, externally blue; tail-feathers also blue, with black shafts; crown of head greenish-blue, with bands of dusky-black, and with a shaft-stripe of greenish-blue; lores blackish, with a streak of orange-rufous above, the sides of the face and ear-coverts being also orange-rufous; cheek-stripe bright blue, with dusky bars; on each side of the neck a band of buffy-white feathers, slightly tinged with orange-rufous; under surface of body rich orange-rufous, the throat buffy-white; the sides of the upper breast greenish-blue; bill black; feet coral-red; iris dusky-brown. Total length, 7·5 inches; culmen, 1·75; wing, 3·1; tail, 1·5; tarsus, 0·35.

Adult Female.—Similar to the male, but not quite so bright in colour, and always to be distinguished by having *the basal half of the under mandible red.* Total length, 7·0 inches; culmen, 1·55; wing, 3·0; tail, 1·4; tarsus, 0·3.

Young.—Much more dingy in colour than the adults, and always to be distinguished by the ashy margins to the feathers of the fore-neck and breast, which impart an ashy shade to this portion of the body.

Range in Great Britain.—Universally distributed, but rarer in the north of Scotland. To a great extent migratory, though many individuals remain throughout the year.

Range outside the British Islands.—Found throughout the greater part of Europe, but not extending to the northern portions of the Continent. Thus it is only an accidental visitor to Denmark and Southern Scandinavia, and extends rarely as far north as St. Petersburg. In India and China a smaller race occurs, of a more vivid blue colour, but the Kingfishers of Egypt, Central Asia, and Sind are perfectly intermediate in colour and size, and it is impossible to recognise the eastern race (*Alcedo bengalensis*) as distinct, and therefore we may consider the Common Kingfisher as an inhabitant of the Palæarctic and Indian Regions, merely noting that in its eastern habitat the bird is rather smaller and more highly coloured. The Kingfishers which leave England in the autumn do not apparently travel farther south than the Mediterranean countries, and even here the species is said to be resident, and to nest regularly in small numbers.

Habits.—The protection from shooting, which has of late years been afforded to our beautiful Kingfisher on the Thames, has certainly contributed to an increase in the number of the species, and its bright plumage may now be seen at almost any time of the year. It is unnecessary to add that the beauty of the river scenery is much enhanced by the presence of such a pretty bird as the Kingfisher, whose beauty might be allowed to atone for any delinquencies in the way of catching small trout.

The flight of a Kingfisher is usually advertised by its note which is a peculiarly shrill dissyllabic one—a kind of "h'wēē-h'wēē"—uttered as the bird flies along at a prodigious rate, with a rapid beating of his powerful rounded wings, the bill being held straight out. It by no means follows, however, that the bird is flying over the water all the way, for, as often as not, the Kingfisher rises to a considerable height and takes a swift turn through a portion of the woods or across a meadow, rejoining the stream a little farther on. It is a quarrelsome species, and jealous of intruders, so that a chase often takes place, if another Kingfisher should happen to interfere with the fishingrights of an established owner. A vigorous battle, accompanied by any amount of shrill screaming, is the consequence, and when the weaker bird turns tail, he is pursued by the victor with great fury, the chase being often carried on high in the air. When thus seen, the occasional glimpses of the brilliant blue backs and chestnut breasts of the birds, as they shoot along, are always pleasing.

In the autumn, the number of Kingfishers on any large river is increased by the influx of birds which have been nesting in out-of-the-way places, and have frequented brooks and lakes during the summer. A considerable autumnal migration takes place, and the Kingfisher may then be seen on our southern coasts in some numbers, frequenting reedy ditches and sluices, and not uncommonly the open shore, where the birds feed on small shell-fish. The principal food of the Kingfisher, however, consists of fish, and these it catches with great dexterity, sitting generally on an exposed post or bough, from which it keeps a keen eye on the water below. The speed with which it flies from one perch to another, often crossing a field in passing from haunt to haunt, is truly wonderful, as is also the way in which it will suddenly arrest its flight on arriving at its station, and settle down without any apparent slowing off of its headlong flight. When first settled, the bird often bobs its head up and down and from side to side, and, in the act of perching, it may be seen to elevate the tail, as if to secure an immediate balance.

Nest.—None, that can properly be so called. The birds bore for themselves, in a sandy bank, a long tunnel, at which both male and female labour. At the end of this tunnel is a chamber, in which the eggs are laid. Sometimes stones or roots obtrude in the course of the boring, and the birds have to seek another place, but in one instance I remember finding a nest with seven eggs in the middle of a wood, and at a considerable distance from the river. An old tree in a bed of sand had been blown down and its roots were exposed and standing out into the air. Underneath these overhanging roots the birds had mined their tunnel, which, after a foot or so, was obstructed by roots of considerable size, but the birds had driven their hole over and under these obstructions, until the chamber was reached. In this particular instance the tunnel and nest-chamber were quite clean, but these are sometimes in an extremely dirty condition, and Mr. Seebohm mentions that in one which he examined, "the bottom of the passage was lined with a black or dark green glossy substance smelling strongly of fish, and almost as sticky as bird-lime." This is formed of the castings and droppings of the birds, and the mass often swarms with maggots. The eggs are generally laid upon a small heap of white fish-bones, cast up by the birds, and this constitutes the whole of the "nest."

Eggs.—Six or seven, rarely eight or nine, in number. They are pure white, very glossy, and nearly round. Axis, 0·95 inch; diam., 0·75 inch.

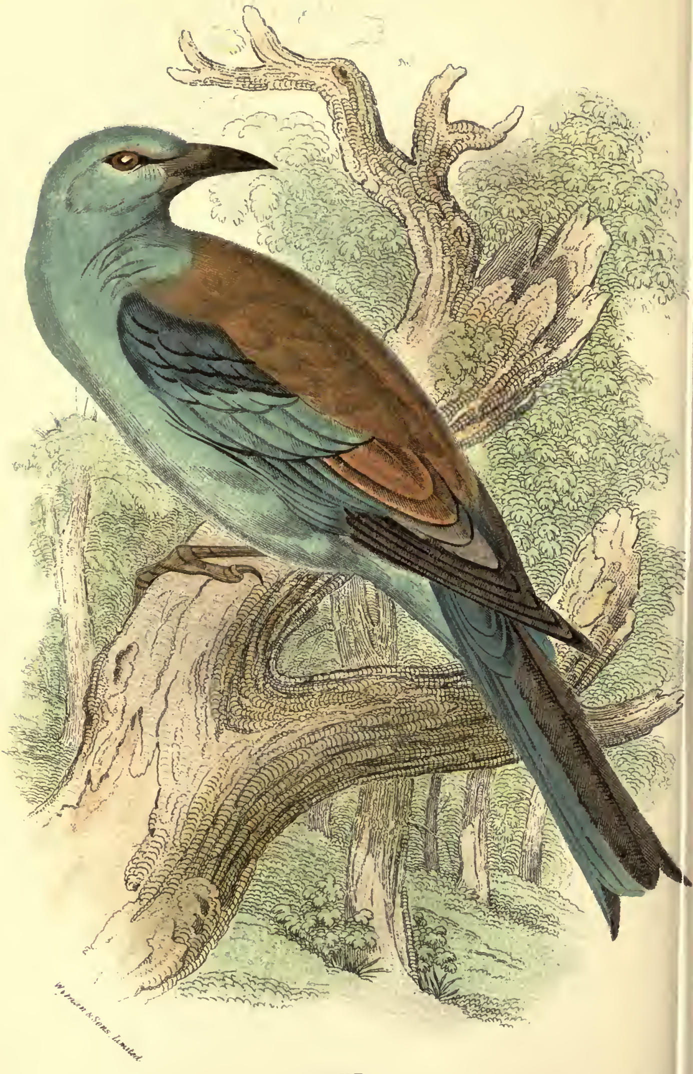
THE ROLLERS. SUB-ORDER CORACIÆ.

These birds constitute a group of Old-World Picarians, of brilliant colour and somewhat Crow-like in form. They are undoubtedly nearly allied to the Kingfishers and Bee-Eaters, though they have not got the long bills of the two last-named groups of birds. The palate is desmognathous, or "bridged," and there are rudimentary basipterygoid processes, while the breast-bone has four notches in its posterior margin. The feet in the Rollers are very much like those of the Kingfishers, that is to say, "Anisodactyle," the soles being flat and the toes united together for a short distance by a membrane, the outer one being joined to the middle one at the extreme base, and to the inner one for the basal joint. The Family of Rollers is divided into two Sub-families, the Ground Rollers (*Brachypteraciinæ*) and the True Rollers (*Coraciinæ*). The former contains three ground-loving genera, all remarkable for their very long legs, and confined to Madagascar, while the True Rollers are found in the temperate and tropical portions of the entire Old World.

THE TRUE ROLLERS. FAMILY CORACIIDÆ.

The species of *Coraciidæ* at present known to us are but twenty-one in number, and they are contained in two genera,

PLATE XXXV.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ROLLER.

Coracias and *Eurystomus.* They are all birds of brilliant plumage, especially remarkable for the bright blue colour of the wings and tail; but the Broad-billed Rollers (*Eurystomus*), which have a wide and slightly-hooked bill, are found in Africa and the Indian and Australian Regions, even extending to China and Eastern Siberia, while the True Rollers, which have a much narrower and more slender bill, are not found in the Australian Region at all.

THE TYPICAL ROLLERS. GENUS CORACIAS.

Coracias, Linn. Syst. Nat. i. p. 150 (1766).
Type, *C. garrulus* (L.).

As has been already mentioned, the Rollers are somewhat like Crows in shape, and it is doubtless this Corvine aspect and the brilliant blue of their plumage that leads to their being called "Jays" in so many countries, particularly in India. The bill is also Corvine, and the nostrils are placed near the base of the upper mandible, and are hidden by bristly plumes. The tail consists of twelve feathers, and the outermost on each side is sometimes produced to a considerable length in some African species. The Common Roller likewise exhibits a tendency to an elongation of the outer tail-feather. The base of the bill is beset with several strong bristles.

I. THE COMMON ROLLER. CORACIAS GARRULUS.

Coracias garrulus, Linn. S. N. i. p. 159 (1766); Macg. Br. B. iii. p. 540 (1840); Dresser, B. Eur. v. p. 141, pl. 293 (1871); Newton, ed. Yarr. ii. p. 428 (1881); B. O. U. List Br. B. p. 82 (1883); Seebohm, Br. B. ii. p. 321 (1884); Saunders, Man. p. 271 (1889); Lilford, Col. Fig. Br. B. part xii. (1890); Sharpe, Cat. B. xvii. p. 15 (1892).

(*Plate XXXV.*)

Adult Male.—General colour above light tawny-brown; head greenish-blue, the forehead and eyebrow whitish, the hinder part of the latter greenish-blue like the crown; lores black; fore part of cheeks and chin white; sides of face, cheeks, and under surface of body light greenish-blue, paler on the abdomen and under tail-coverts; lower back and rump purplish-blue; wing-coverts greenish-blue, those along the edge of the wing purplish-blue; quills black, the outer web greenish-blue at the base, shading into purple; primary quills externally greenish-blue, the secondaries externally purple; centre tail-feathers dull oily-green, the remainder greenish-blue for two-thirds of the outer web and black on the inner web, the ends of the feathers greenish-blue with a black shaft, the blue increasing in extent on the outside tail-feathers, the outermost having a black spot at the tip; bill blackish horn-colour; feet dark yellow; iris dark brown. Total length, 12 inches; culmen, 1·3; wing, 7·5; tail, 4·8; tarsus, 0·85.

Adult Female.—Like the male in plumage. Total length, 12 inches; wing, 7·4.

Young Birds.—Resemble the adults, but are much duller in colour, the head and neck being oily-green, the blue on the wings not so bright, and the greenish-blue portion shaded with brown; the colour of the under-parts much duller, and the outer tail-feathers not tipped with black.

Range in Great Britain.—An occasional visitor in spring and autumn. It has occurred over a hundred times, and has been met with as far north as the Orkneys and Shetland Isles, as well as in Ireland, where some half-dozen notices of its capture have been recorded. It is, however, in the southern and eastern counties of England that the Roller has most frequently occurred.

Range outside the British Islands.—The Roller is a summer migrant to Central and Southern Europe, being more plentiful in the south, arriving in April and departing in August. It is found in Northern Germany, and breeds in Sweden as far as 61° N. lat., and as far as St. Petersburg in Russia. Its eastern range extends to the Altai Mountains and to Cashmere, while it also occurs as far north as Omsk in Siberia. The winter home of the Common Roller is in Africa, where it reaches the Cape, passing through Egypt and through Eastern Africa to arrive at its winter home. The bird breeds in Cashmere, and apparently a few winter in North-western and Central

India, but the bulk of the individuals bred in Asia probably turn west and migrate to Africa in a south-westerly direction, as do many other Asiatic birds.

Habits.—The Roller is strictly an arboreal species, and is not at all at home on the earth, where, doubtless, its flat-soled feet are not adapted for walking. Nevertheless, it seeks for most of its food on the ground, but in a Picarian manner, that is to say, by darting on its prey from a perch, like a Bee-Eater or a Kingfisher. Mr. Seebohm observes:—"A favourite mode of feeding adopted by the Roller is to sit on some clod of earth or other vantage-ground and wait patiently until it sees a beetle or a locust moving, then to suddenly pounce down and capture the prize." It is also a frequenter of reed-beds, on which it is said to perch when on the look out for frogs.

The name of Roller is applied to this bird on account of its curious habit of "rolling" or tumbling in the air, like a Tumbler-Pigeon. Sometimes a whole flock of Rollers will indulge in this strange evolution, and Canon Tristram relates how he saw large flocks of Rollers on migration near Mount Tabor in Palestine, on the 12th of April. One of these flocks congregated on some trees near a fountain, and made as much noise as a colony of Rooks. "After a volley of discordant screams, one or two birds were observed to start from their perch and commence a series of gambols and somersaults in the air; then in a moment or two the whole flock followed their example, this strange performance being repeated many times in succession."

The same author writes of this species:—"Brilliant and conspicuous, both in plumage, note, and manners, the Rollers attract attention everywhere, and are found in every kind of country alike—woodland, plain, desert, ravines, ruins,—always perching where they can see and be seen." They are by no means entirely forest-loving birds, and are found in well-timbered country as well as in the open plains, where there are plenty of trees, on which the Rollers love to perch on some conspicuous branch, where their bright colour renders them visible for a long distance off.

The note of the Roller is very harsh, and is rendered by

Mr. Seebohm as "wrack, wrack," something like the sound made by a ratchet-drill. In Spain, according to Mr. Howard Saunders, the note is rendered by the words "Carlanco, Carlanco."

The Roller is a late breeder, and never commences to lay before May, often not until the end of that month in some countries.

Nest.—Very slight, or none at all. The bird selects a convenient hole in a tree, a building, or even in a bank, and though not a gregarious bird at the nesting-time, it has been found in Palestine, by Canon Tristram, nesting in holes in a bank, excavated by the birds themselves. The nest is a slight structure of twigs or grass with hair or feathers, but when the hole of a tree is selected, or a deserted Woodpecker's hole used as a nesting-place, the eggs are deposited on chips of wood, without any attempt at a nest.

Eggs.—From four to six in number, rounded in shape, and glossy white. They measure: axis, 1·5 inch; diam., 1·15 inch.

II. THE ABYSSINIAN ROLLER. CORACIAS ABYSSINICUS.

Coracias abyssinicus, Bodd. Tabl. Pl. Enl. p. 38 (1783); Seebohm, Brit. B. ii. p. 331 (1884); Sharpe, Cat. B. Brit. Mus. xvii. p. 19 (1892).

Coracias leucocephalus, Saunders, Man. Brit. B. p. 272, note (1889).

Adult Male.—Exactly like *C. garrulus*, but with the outer tail-feather on each side produced to a great length; bill black; feet greenish-yellow; iris brown. Total length, 18 inches; culmen, 1·05; wing, 6·7; tail, 5·4; outer tail-feather, 11·3; tarsus, 0·85.

Range in Great Britain.—Two specimens of this most unlikely visitor to Great Britain are said to have been obtained in Scotland. Mr. Small, the well-known taxidermist of Edinburgh, states that the male was shot near Glasgow about the year 1857, and was preserved by him. A female bird was shot, not long afterwards, about forty miles from the place where the male had been shot. Like Mr. Howard Saunders (*l.c.*), I give the story "for what it is worth."

Range outside the British Islands.—This Roller is an inhabitant of the Soudanese Sub-region of Africa, and is found in Senegambia, on the Niger, and extends to North-east Africa. It has never been found in any other part of the African continent, and no more improbable visitor to the north of Europe could well be imagined.

III. THE INDIAN ROLLER. CORACIAS INDICUS.

Coracias indicus, Linn. Syst. Nat. i. p. 159 (1766); Sharpe, Cat. B. Brit. Mus. xvii. p. 10 (1892).

Adult Male.—General colour drab-brown, slightly glossed with oily-green; rump greenish-blue, washed with purple; wing-coverts greenish-blue, the lesser coverts bright purplish-blue; quills also purplish-blue, the inner secondaries like the back, the primaries *with a broad sub-terminal band of silvery-blue*, decreasing in size towards the centre of the wing; centre tail-feathers green, the remainder purplish-blue at the base, succeeded by a broad band of silvery-cobalt, and ending in a band of purplish-blue; crown and nape green, with a greenish-blue eyebrow; base of forehead sandy-buff, succeeded by a shade of purplish-lilac; sides of face, throat, and chest purplish-lilac, the feathers streaked with greenish-white shafts; breast lilac-brown; abdomen, thighs, and under wing- and tail-coverts silvery-cobalt; bill blackish-brown; feet brownish-yellow; eyelid and naked skin round the eye pale gamboge; iris greyish-brown. Total length, 12 inches; culmen, 1·5; wing, 7·3; tail, 5·0; tarsus, 0·95.

Adult Female.—Similar to the male in colour. Total length, 12 inches; wing, 7·15.

Range in Great Britain.—A Roller was shot at Muckton, near Louth, in Lincolnshire, on the 27th of October, 1883, by a cottager, and was entered in the Migration Report for 1883 (p. 47) as *Coracias garrulus*. The specimen in question has now become the property of Mr. John Cordeaux, and turns out to be the Indian Roller.

Range outside the British Islands.—A well-known inhabitant of the Indian Peninsula and Ceylon, ranging westwards through Baluchistan to Persia, and even to Asia Minor.

Habits.—Similar to those of *Coracias garrulus.*

THE OWLS. ORDER STRIGES.

The Owls have generally been considered to be Birds of Prey, and to form a part of the Order *Accipitriformes*, which embraces all the Vultures, Hawks, and Ospreys. The Owls, however, possess so many peculiar characteristics, that by many modern zoologists they are considered to be very distinct from Hawks, and there is a good deal to be said as to their separation from that group of birds, but I cannot admit the wide divorce which Dr. Gadow seeks to introduce between the *Accipitres* and the *Striges*. According to the paper published by the last-named gentleman (in the "Proceedings" of the Zoological Society for 1892, pp. 229-256) on the "Classification of Birds," the Owls come under his Order *Coraciiformes*, following the Parrots (*Psittaci*), but also included in the same Order as the Swifts, Trogons, and the bulk of Picarian Birds. That the Parrots should come between the Picarians and the Owls seems to be a very feasible proposition, for there are many Parrots which have Owl-like propensities, and even a Strigine appearance; but, when all things are considered, the Owls must be reckoned more Birds of Prey than anything else, and even Dr. Gadow has to admit that the bill and feet in his Sub-order *Striges* are "raptorial" and nothing else, even if his other characters are more or less Picarian.

It must also be remembered that the Owls are related to the *Accipitres* through the *Pandiones*, *i.e.*, the Ospreys, or Fishing-Eagles, which, like the Owls, have the fourth toe reversible, while the proportions of the tibio-tarsus and the tarso-metatarsal bones are exactly the same as those of the Owls. Among the latter, also, there are several species of Fishing-Owls which have bare feet, and the soles covered with spicules like the Ospreys. However much, therefore, we may regard the Owls as forming a separate Order, these features of relationship with the Ospreys must never be overlooked.

Owls are distinguished, as a rule, by their soft and downy plumage and by their large and rounded heads, with the eyes directed *forwards*, not laterally placed as in Eagles and Hawks. The face is generally, but not always, surrounded by a disk of stiffened feathers, a feature only seen in the Harriers and Harrier-Hawks among the *Accipitres*.

As the Owls are mostly nocturnal in their habits, the plumage is very soft and the flight noiseless, so that the birds are able to steal upon their prey without being heard; and the wings are very broad, with soft webs to the quills, which produce no sound when the bird is flying. The young birds, when hatched, are covered with down, generally white, but in some species black; they are fed in the nest by the parent birds for a considerable time.

The Owls may be divided into two Families, of which the Barn-Owl is the type of the *Strigidæ*, while all the rest of the Owls belong to the *Bubonidæ*, of which the Eagle-Owl may be taken as the type.

THE TRUE OWLS. FAMILY BUBONIDÆ.

In these birds the hinder margin of the breast-bone, or sternum, has two or more clefts or fissures; the furcula, or merry-thought, is free, and not attached to the keel of the sternum. There is no serration on the inner margin of the claw of the middle toe, and the latter is longer than the inner toe.

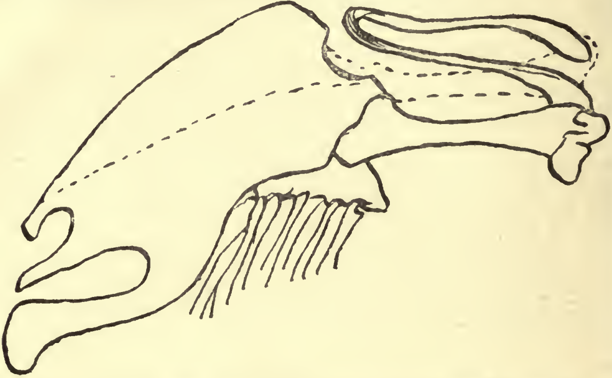
There are two Sub-families of the True Owls, the *Buboninæ*, which have the facial disk imperfect and less developed above the eye, and the *Syrniinæ*, in which the disk is perfect.

In the *Buboninæ* are included all the Fishing-Owls (*Ketupa*), the Eagle-Owls (*Bubo*), the Tufted Owls (*Scops*), the Snowy Owls (*Nyctea*), the Hawk-Owls (*Surnia*), the Little Owls (*Carine*), the Burrowing-Owls (*Speotyto*), and the Pigmy Owls (*Glaucidium*), besides some other tropical genera, of which we have no representatives in Europe.

THE EAGLE OWLS. GENUS BUBO.

Bubo, Cuvier, Règne Anim. 1, p. 331 (1817).
Type, *B. bubo* (L.).

These Owls may be first recognised by their large size, and by the long tufts of plumes on each side of the crown. The feet are thickly clothed with feathers, and the wings are not very long in comparison with the size of the birds, and do not reach to the end of the tail.



Sternum of *Bubo bubo*, to show notches and furcula. [From the Catalogue of Birds in the British Museum.]

The Eagle-Owls are found throughout the greater part of Europe, Africa, and Asia, extending to the Malay Archipelago, but not beyond, into the Australian Region. They are distributed throughout the New World from north to south, being absent only in some of the districts unsuitable to their habits.

I. THE EAGLE-OWL. BUBO BUBO.

Strix bubo, Linn. Syst. Nat. i. p. 131 (1766).
Bubo ignavus, Forster; Newton, ed. Yarr. Brit. B. i. p. 168 (1872); Dresser, B. Eur. v. p. 339, pl. 315 (1873); Sharpe, Cat. B. Brit. Mus. ii. p. 14 (1875); B. O. U. List Br. B. p. 90 (1883); Saunders, Man. Br. B. p. 299 (1889).

Bubo maximus, Fleming; Macg. Br. B. iii. p. 428 (1840); Seeb. Br. B. i. p. 187 (1883); Lilford, Col. Fig. Br. B. part xi. (1889).

Adult Male.—Of large size. Blackish above, mottled and freckled with yellowish-buff or tawny markings; ear-tufts, 3¼ inches in length, black, with tawny markings on the inner ones; nape and hind-neck lighter than the rest of the upper surface, tawny-buff, with broad black centres and narrow black cross-lines; scapulars externally whitish or pale tawny, with a few black cross-lines; quills dark brown, barred with tawny-buff, the bars freckled with black, the inner webs for the most part tawny, with irregular black markings; centre tail-feathers blackish, with buff vermiculations, the rest more or less distinctly barred with tawny-buff, the inner webs bright tawny, with irregular blackish mottlings, more distinct towards the ends of the feathers; lores and region of the eye whitish; sides of neck like the hind-neck; chin and fore-neck white, separated from each other by a band of tawny, black-centred feathers; crop tawny-buff; centre of breast white; rest of under surface tawny-buff, the chest-feathers streaked with black and spotted or barred with irregular lines of black; bill blackish horn-colour; iris orange. Total length, 26 inches; wing, 18·6; tail, 11·2; tarsus, 3·2.

Adult Female.—Similar to the male, but larger. Wing, 18·2 inches.

Nestling.—Covered with down of a dull white colour.

Range in Great Britain.—Of rare and accidental occurrence. Many of the records doubtless refer to specimens escaped from confinement, as the bird is often kept in aviaries, and not unfrequently breeds in captivity. It is, therefore, difficult to determine whether the Eagle-Owls which have from time to time been recorded, have actually wandered to Great Britain, or have been escaped individuals. Some undoubtedly wild birds have, however, been taken in the Orkneys and Shetland Isles, on the mainland of Scotland, and in some parts of England; so that there can be no doubt that the bird occasionally visits us from the Continent. The statement of its occurrence in Ireland is untrustworthy, as the specimen recorded by Dr.

Burkitt, as shot in Co. Waterford on the 27th of January, 1851, after being ascribed to *B. virginianus*, proved on examination to be the South African *Bubo maculosus*, and was doubtless of the same origin as the Gold-vented Bulbul, *Pycnonotus capensis* (see Vol. I., p. 318).

Range outside the British Islands.—Generally distributed throughout Europe and Northern Africa, being replaced in Central Asia by *Bubo turcomanus*, a pale form which extends westwards into South-eastern Russia, and which has occurred in the Himalayas. The typical form is said to re-occur in Eastern Siberia and Corea, and to extend to China, and a specimen from the Goto Islands, about fifty miles to the west of Nagasaki, is in the Norwich Museum. So far as is known the Eagle-Owl has never occurred in the Japanese Islands, the bird so identified having proved to be *Bubo blakistoni*, which also inhabits Corea and North-eastern Siberia.

Habits.—The Eagle-Owl is one of the largest and one of the most ferocious of all the nocturnal Birds of Prey, and even in confinement has been known to attack its owner without any provocation. It creates great havoc among the larger game, and devours not only Grouse, but Rabbits and Hares, as well as Pheasants and Partridges. Mr. Seebohm states that in the northern forests it also feeds upon Crows and Jays, as well as devouring mice and rats.

The Eagle-Owl breeds early, laying its eggs in March or in the beginning of April, and generally selects the old nest of some other bird. It sometimes chooses the hole of a tree, but not unfrequently nests on the ground or usually on the ledge of a rock.

Although this fine Owl generally hunts by night, it is not much disturbed by the daylight, and is able to take excellent care of itself, while the nest is often in an exposed situation, in the full glare of the light. Several observers who have tried to shoot the parent birds at the nest, admit that this is nearly impossible to do, as the birds appear to notice the intruder, however carefully concealed.

Nest.—None to speak of, and sometimes consisting merely of a slight hollow in the ground. The young are often found resting on the *débris* of the animals caught by the old birds, and the heaps of castings thrown up by the latter, no other attempts at a nest having been made.

Eggs.—Two or three in number. Like those of other Owls, they are white, but are somewhat rough in texture. They are easily distinguished by their large size, measuring as follows: axis, 2·15–2·55 inches; diam., 1·85–1·95.

THE TUFTED OWLS. GENUS SCOPS.

Scops, Savigny, Descr. de l'Egypte, p. 291 (1809).

Type, *Scops scops* (L.).

These little Tufted Owls are really diminutive representatives of the great Eagle-Owls, from which they are easily distinguished by their small size, though they have the same elongated "ear-tufts," or bunches of erectile plumes, on the side of the crown, as their larger relatives. They have relatively longer wings than the Eagle-Owls, but are much more strictly nocturnal in their habits than the latter birds. Though Mr. Seebohm separates them under the genus *Scops*, he says that he only did so for the sake of convenience. This may be the case, if external appearances only are to be taken into consideration, but there can be no doubt that a careful comparison of anatomical and osteological characters would undoubtedly show that the two genera are distinct. For our purpose, the size of the two birds is sufficient, and there need be no difficulty in recognising the largest *Scops* from the smallest *Bubo*.

I. SCOPS SCOPS. THE SMALL TUFTED OWL.

Strix scops, Linn. Syst. Nat. i. p. 132 (1766).
Scops aldrovandi, Macgill. Br. B. iii. p. 422 (1840).
Scops giu, Newt. ed. Yarr. Br. B. i. p. 173 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 47 (1875); Dresser, B. Eur. v. p. 329, pl. 314 (1876); B. O. U. List Br. B. p. 89 (1883); Lilford, Col. Fig. Br. B. part iii. (1886); Saunders, Man. p. 297 (1889).
Scops scops, Seeb. Brit. B. i. p. 193 (1883).

Adult Male.—Above grey, mottled all over with vermiculations and pencillings of brown or blackish, with central streaks of black down the shafts of the feathers; ear-tufts grey, externally sandy-brown, with white cross-markings; hind-neck greyer than the back; outer web of the scapulars white or buff, broadly tipped with black, and so forming a more or less distinct shoulder-patch; wing-coverts like the back, the median and greater series with large spots of white on the outer web; sides of face grey, with a few dusky cross-lines, the ear-coverts with a sandy tinge, especially below the eye; behind the ear-coverts a crescent-like line of black, extending on to the sides of the neck; chin whitish; throat and sides of neck clear grey, with brown cross-lines, and washed with orange-buff, the shafts of the feathers black; under surface of body greyish, with more or less orange-buff, the black shaft-lines distinct, especially on the flanks; feathers of the breast and sides of the body lighter, with whitish bars on most of them; lower flanks and under tail-coverts white, with one or two sandy-buff bars, and scarcely any blackish vermiculations; thighs and tarsal plumes orange-buff, with a few brown bars; bill black; toes brown; claws white at base, nearly black at tip; iris yellow. Total length, 7·5 inches; wing, 5·9; tail, 2·9; tarsus, 0·95.

Adult Female.—Similar to the male. Total length, 8 inches; wing, 6·15.

The Small Tufted Owl, usually called the Scops Owl, is readily distinguished by its size from the other Tufted Owls of Europe, such as the Eagle-Owl, the Long-eared, and the Short-eared Owls. The members of the genus *Scops* are distributed over the greater part of the globe, with the exception of the Australian Region, and it is as well to remind my readers that the European species is easily recognisable by the description and figures of the bird quoted above. This warning is the more necessary, as I have had some little Tufted Owls submitted to me at the British Museum which proved to be *Scops brasiliensis* and other exotic species, which could only have been escaped specimens, or individuals brought from afar to deceive the unwary and obtain the ridiculous price which is often paid for specimens asserted to have been captured in Great Britain.

The American Tufted Owl (*Scops asio*) has been said to have been twice captured in England, once in Yorkshire and once in Norfolk; but neither Professor Newton nor Mr. Howard Saunders attach any credence to the statements, and the occurrences are probably on a par with those accompanying the alleged record of *Scops brasiliensis* and others, with which I am familiar.

Range in Great Britain.—Only a very occasional visitor, which has occurred in all three kingdoms. It has been obtained in several English counties, and at least three of the captures in Norfolk are deemed authentic; and it has been recorded from Essex, Yorkshire, Middlesex, Buckinghamshire, Berkshire, Wiltshire, Cornwall, Pembrokeshire, Lancashire, and Cumberland. One record from Sutherlandshire is also admitted, as well as three from Ireland.

Range outside the British Islands.—Generally distributed over Central and Southern Europe, but not extending into the northern provinces or into Scandinavia. In winter it migrates into North-eastern Africa and Senegambia; but in Africa generally a dark form, *S. capensis*, is found, and to the eastward the Tufted Owls are represented by several allied races, the exact ranges of which have not been yet satisfactorily determined.

Habits.—The Small Tufted Owl is almost entirely a nocturnal bird, feeding chiefly on insects, but also devouring occasionally mice and shrews, and, according to Naumann, small birds and frogs. Its presence is generally detected by its note, for the bird is seldom to be seen, though, according to some observers, it flies about in the daylight; as a rule, however, this little Owl only emerges from its retreat in the evening, when it sallies forth in quest of its food. The note is described by Mr. Seebohm as monotonous as a passing bell, and almost as melancholy. "To my mind," he says, "this note is exactly represented by the syllable *ahp*, repeated in an unvarying and desponding strain every ten or twenty seconds. This bird is generally, if sparingly, distributed all over Greece, from the seashore almost, if not quite, up to the pine-regions on the mountains. I have often listened to the note as I lay in my camp-bed in a peasant's cottage at Agoriane, half-way up the Parnassus, where it was almost too cold to sleep with comfort;

and I have heard it from the hotel at Buyukdere, on the Bosphorus, when, with window wide open, the heat made it still more difficult to pass the night in happy unconsciousness even of ornithological sounds." By most observers the note is said to be "kiū," whence its scientific name of *giu*.

The Small Tufted Owl comes back to Europe in March, and migrates south again in September and October, though a few remain in Southern Spain during the winter, as Colonel Irby has observed them in January.

Nest.—Little or none, as with most Owls. The site generally selected by this little species is a hole in a wall, or more often in a hollow tree, where the nest, such as it is, is principally composed of the castings of the old birds.

Eggs.—Five or six in number; pure white and nearly round. Axis, 1·2–1·3; diam., 1·1–1·15.

THE SNOWY OWLS. GENUS NYCTEA.

Nyctea, Stephens, Gen. Zool. xiii. pt. 2, p. 63 (1826).

Type, *Nyctea nyctea* (L.).

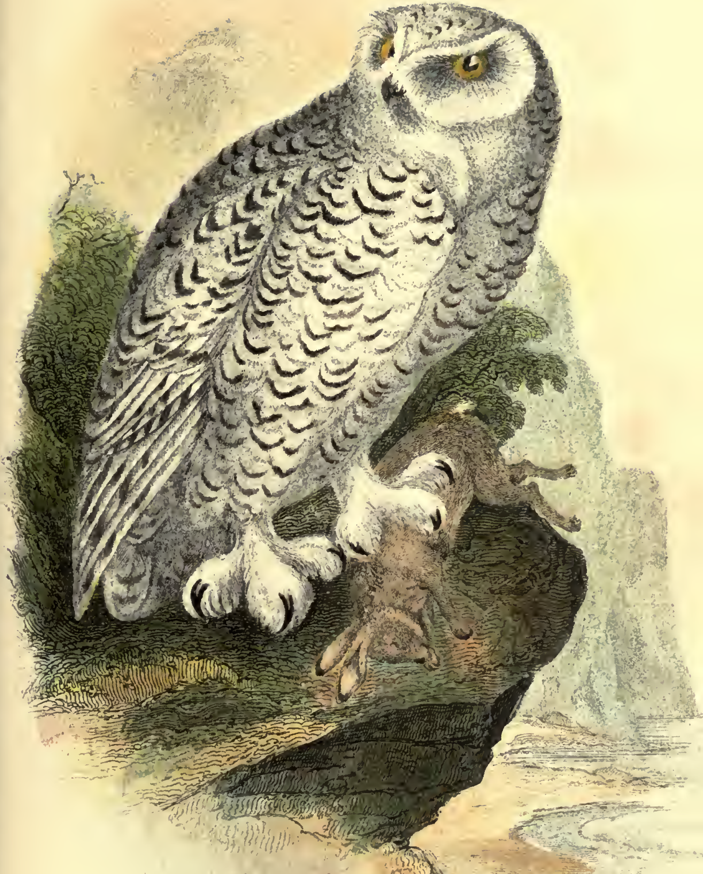
The genus *Nyctea* contains but one species, the great Snowy Owl, which is easily recognised by its white plumage and its thickly-feathered toes. Its dense plumage shows that it is an inhabitant of the Arctic Regions, and it is, moreover, a day Owl, like its smaller relation, the Hawk-Owl (*Surnia*). It differs from the Eagle-Owls in the small size of the "ear-tufts," and in most individuals these are so small as not to be distinguished from the general plumage of the head, so that, as a rule, the Snowy Owl is classed as one of the un-tufted series of Owls. A specimen from Archangel in the British Museum, however, shows that ear-tufts are sometimes present, and I believe that I was the first to draw attention to this fact in the "Catalogue" of the *Striges* in the British Museum (Cat. B. ii. p. 125).

Only one species of the genus *Nyctea* is known, inhabiting the northern regions of the Old and New Worlds.

1. THE SNOWY OWL. NYCTEA NYCTEA.

Strix nyctea, Linn. S. N. i. p. 125 (1766).
Syrnia nyctea, Macgill. Br. B. iii. p. 407 (1840).

PLATE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SNOWY OWL.

Nyctea scandiaca (L.), Newt. ed. Yarr. Brit. B. i. p. 187 (1872); Dresser, B. Eur. v. p. 287, pl. 310 (1873); Sharpe, Cat. B. Brit. Mus. ii. p. 125 (1875); B. O. U. List Br. B. p. 87 (1883); Saunders, Man. Brit. B. p. 293 (1889); Lilford, Col. Fig. Br. B. part xviii. (1891).
Surnia nyctea, Seeb. Brit. B. i. p. 177 (1883).

(*Plate XXXVI.*)

Adult Male.—Pure white above and below, with a longitudinal spot of brown on the hinder crown and on the wing-coverts; on the quills a few remains of brown bars, and on the tail-feathers a small spot near the end of the central rectrices; bill and claws blackish horn-colour; iris deep yellow. Total length, 23 inches; wing, 16·7; tail, 9·6; tarsus, about 2·1.

Adult Female.—Similar to the male, but a trifle larger. Total length, 26 inches; wing, 18·3.

Young Birds.—Not so pure white as the adults, with bars of dusky-brown both above and below, the quills and tail being also banded.

There can be no doubt that the Snowy Owl becomes whiter with age, and that the very old individuals lose their markings almost entirely, though it is a question whether the females ever become perfectly snow-white and lose their spots and bars. American specimens appear to have the toes more thickly clothed with feathers than European examples.

Nestling.—Covered with down of a sooty-brown colour.

Range in Great Britain.—An occasional visitant, occurring chiefly in winter, and being noticed nearly every year in the Orkneys and Shetland Islands. It has also been recorded many times from Scotland, as well as on various occasions in England and Ireland. Although many of the Snowy Owls winter in the vicinity of their arctic home, it is plain that a considerable southward migration takes place, and Thompson mentions that a flock of these Owls accompanied a ship half-way on the voyage between Labrador and Ireland, while Mr. Seebohm one morning found a couple perched on the masts of the ship in which he was returning from the Petchora round the North Cape, and when the vessel was out of sight of land.

Range outside the British Islands.—The Snowy Owl is an inhabitant of the high north in both Hemispheres, and breeds beyond the region of forest-growth. Colonel Feilden, during the voyage of the *Alert* towards the North Pole, found this Owl nesting in Grinnell Land as high as 82° 33′ N. lat. It arrived there on the 29th of March and left at the end of August. In some of its northern haunts, however, the Snowy Owl is but a straggler, as is the case in the Færoe Islands, Iceland, and Spitsbergen, though it is common and chiefly a resident in the Kola Peninsula, Novaya Zemlya, Waigatz Land, and Franz Josef Land. In Russia its breeding-range occasionally extends farther south, and in winter it wanders (in some seasons occurring in some numbers) as far south as the United States, and to many of the countries of Europe, while it has even been found in Turkestan and the Indus Valley.

Habits.—The Snowy Owl is a bird of the tundra, or barren grounds, and nests in the Arctic Regions of both Hemispheres beyond the limit of forest-growth. Its distribution is somewhat affected by the abundance of Lemmings, which constitute its principal food, as Professor Newton says, occasionally "following those destructive little Rodents along the mountain ranges to lower latitudes, generally keeping, however, on the fells. It is thus often found to breed abundantly in a district wherein for many years before it had only been known as a straggler." Mr. Nelson states that in Alaska, in a good Lemming year, the Snowy Owls have been seen dotting the country here and there, as they perched on the scattered knolls, and they then make their nests on the ground, on the sides of the hills.

Besides the Lemming, which constitutes its principal food, the Snowy Owl feeds on Hares and other game, particularly Grouse and Ptarmigan, and it has been known to accompany sportsmen and seize the birds as they fell, before the hunter could recover them. It is also said to catch fish, and will pursue and hunt Ducks and other water-fowl. The note of the bird, when on the wing, is said by Wheelwright to be a loud "krau-au," repeated three or four times, but it is seldom heard unless the bird is excited.

Nest.—Made of a little moss or lichen, with a few feathers. The eggs are often laid upon the bare ground, or in a little hollow scooped in the reindeer-moss. They are not laid all at once, but apparently at a considerable interval, so that nestlings of all sizes, as well as freshly laid eggs, are found in the same nest, the warmth of the more advanced young birds doubtless contributing to the hatching of the more recently laid eggs.

Eggs.—Six to eight in number, occasionally more; creamy-white, rather rough in texture, and more elongated than those of the Eagle Owl, which they nearly equal in size. Axis, 2·1–2·3 inches; diam., 1·65–1·8.

THE HAWK-OWLS. GENUS SURNIA.

Surnia, Duméril, Zool. Anal. p. 34 (1800).
Type, *S. ulula* (L.).

The members of the genus *Surnia* are two in number, one species being found in Europe and Northern Asia, and the other in North America. They are much smaller than the Snowy Owl, which they resemble in their habit of hunting by day, and like that species, the Hawk-Owls have no elongated ear-tufts on the head. The tail, too, is much longer than in the Snowy Owl, being nearly of the same length as the wing, and is wedge-shaped, the feathers being graduated.

I. THE HAWK-OWL. SURNIA ULULA.

Strix ulula, Linn. Syst. Nat. i. p. 133 (1766).
Surnia ulula, Dresser, B. Eur. v. p. 301, pl. 311 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 129 (1875); B. O. U. List Br. B. p. 88 (1883).
Surnia funerea, Lilford, Col. Fig. Br. B. part xiii. (1890).

Adult Male.—General colour above sepia-brown, with bars of white; scapulars externally pure white, forming a longitudinal patch; crown white, barred with dark brown, the bars broader towards the nape, which is white with a few brown shaft-lines and margins on the feathers; a large black patch on each side of the neck; lesser and median wing-coverts like the back, with large oval spots of white; quills ashy-brown, with bars of lighter brown, the primaries tipped with white, the secondaries more broadly; tail ashy-brown, with nine narrow bars of dull white, purer white on the inner web; an indistinct eyebrow, as well as the sides of the face, white; the ear-coverts tipped with black, and forming a crescentic line down the hinder margin of the latter; throat white, separated from the chest, which is also white, by a band of dusky-brown feathers; remainder of under surface white, narrowly banded with brown, the bars less distinct on the lower abdomen, but again pronounced on the under tail-coverts; bill light yellow; claws blackish-brown; iris bright yellow. Total length, 14 inches; wing, 9·7; tail, 7·5; tarsus, about 1·0.

Young Birds.—Resemble the adults, but are more dingy-brown in colour, and do not show the white spots on the scapulars and wing-coverts so distinctly; the white on the throat and fore-neck is also less distinctly indicated.

The Hawk-Owl is easily recognised from the other British species of Owl by its long and wedge-shaped tail, and by its regularly banded under surface.

Range in Great Britain.—Although some half-a-dozen specimens of Hawk-Owls have been obtained in Great Britain, it would seem that the European species comes but seldom, and it is the American species which principally visits us. Such British specimens as have been examined by competent judges have proved to be *Surnia funerea* and not *S. ulula*, but of the latter I exhibited a specimen before the Zoological Society in 1876, which had been shot near Amesbury in Wiltshire, and which was an undoubted European Hawk-Owl. Doubtless the specimen obtained in the Shetlands, which was destroyed by moth, was also a wanderer from Scandinavia.

Range outside the British Islands.—Throughout the pine-regions of the northern parts of Europe and Northern Asia to Kamtchatka, Mr. Seebohm says that the Siberian bird differs from the European form in having the under-parts purer white, and the dark parts darker and greyer. It has occurred in Alaska. The winter range of the Hawk-Owl does not extend far to the south of its breeding area, but it occasionally visits Denmark and Northern Germany, and has occurred in Poland, Austria, and Northern France. It also winters in Central and Southern Russia, but in Northern Turkestan it is a resident, and has not been found migrating farther south.

Habits.—The name of "Hawk"-Owl is very well applied to this species, as in many of its ways it is more like a Hawk than an Owl, and has even a Hawk-like note. It pursues its prey in the daylight, and is a fierce and daring bird, often attacking a man in defence of its nest. Like the Snowy Owl it feeds largely on Lemmings, and follows the migrations of this small rodent. It will also devour mice, and even larger game, such as the Willow-Grouse, but likewise eats insects.

Nest.—None; the eggs being laid in the hole of a tree, on the chips of the wood at the bottom of the nest-hole. This Owl will also take possession of nesting-boxes placed for Ducks to breed in.

Eggs.—From five to eight in number; white, and somewhat smooth and glossy. They are laid at different intervals, as with the Snowy Owl, and incubation lasts from about the middle of April to the middle of June. Axis, 1·5–1·65; diam., 1·25.

II. THE AMERICAN HAWK-OWL. SURNIA FUNEREA.

Strix funerea, Linn. Syst. Nat. i. p. 133 (1766).
Syrnia funerea, Macgill. Brit. B. iii. p. 404 (1840).
Surnia funerea, Newt. ed. Yarr. Brit. B. i. p. 183 (1872); Dresser, B. Eur. v. p. 309, pl. 312 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 131 (1875); B. O. U. List Brit. B. p. 88 (1883); Seeb. Br. B. i. p. 183 (1883); Saunders, Man. Brit. B. p. 295 (1889).

Adult Male.—Similar to *S. ulula*, but having the bars on the under surface of the body broader and more of a vinous-brown or rufous colour; bill yellow; iris bright yellow. Total length, 15 inches; wing, 9·5; tail, 8·0.

Adult Female.—Similar to the male in colour, and of about the same size. Total length, 14 inches; wing, 9·2.

Range in the British Islands.—Four instances of the occurrence of this American species in the British Islands are authentic: one in Cornwall, in March, 1830; another near Yatton in Somersetshire, in August, 1847; one near Glasgow, in December, 1863; and a fourth near Greenock, in November, 1868. The two other occurrences of Hawk-Owls have already been referred to as belonging to the European form.

Range outside the British Islands.—An inhabitant of the northern portion of North America, extending its winter range to the northern border of the United States.

Habits.—Very similar to those of the European species, and the bird is distinguished by the same fierceness with which it will attack anyone who ventures near its nest. According to Mr. L. M. Turner's observations in Alaska, the Hawk-Owls fly equally well by night or by day.

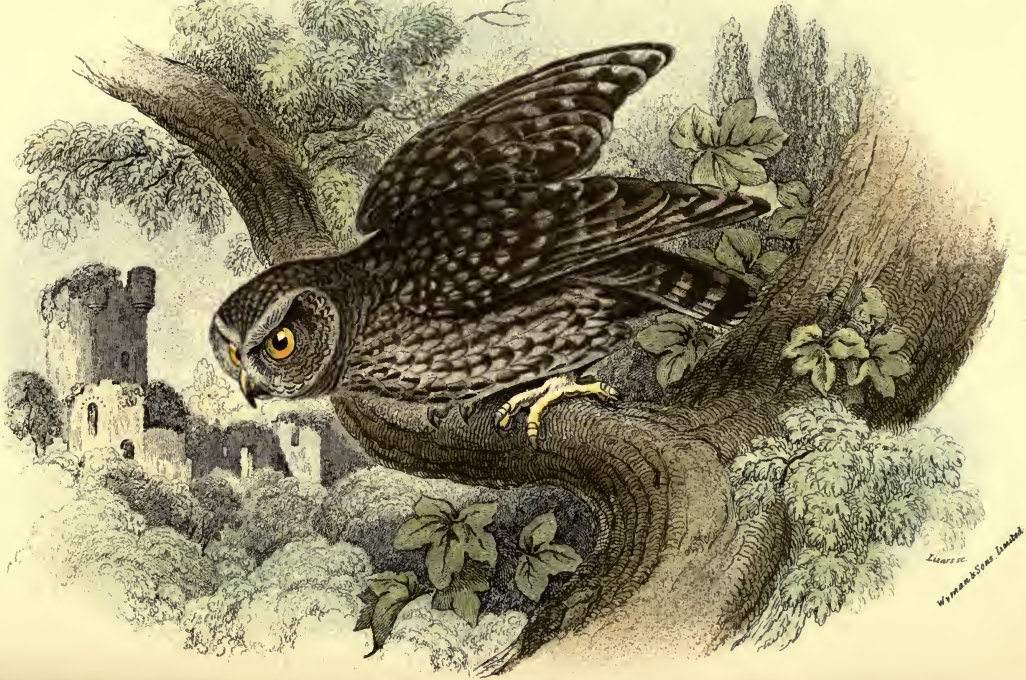
Nest.—None; the bird generally selecting a hole in a tree, as with the European species. Mr. Dall relates that in the Lower Yukon River he found the bird breeding in the top of an old birch-stub about fifteen feet from the ground, the eggs being deposited on the bare wood, and being incubated by the male bird.

Eggs.—Similar in size and appearance to those of the European Hawk-Owl.

THE LITTLE OWLS. GENUS CARINE.

Carine, Kaup, Nat. Syst. Vög. Eur. p. 29 (1829).
Type, *C. noctua* (L.).

The Little Owls form a small group of about six species, which are found in Central and Southern Europe, North-east Africa, and through Central Asia to Northern China, as well as throughout the Indian Peninsula and the Burmese countries. In no case does the size of these small Owls exceed 8 inches and they have, moreover, a curious swollen pea-shaped nostril, in which the nasal opening is pierced. The wing is rounded, the first primary not falling very far short of the tip of the second. The fifth primary has an indentation on the inner web, which is escalloped like the first four quills. The toes are thickly feathered at the base, and the hind part of the tarsus is always concealed by plumes. These Little Owls of the genus *Carine* must not be confounded with the Pigmy Owlets (*Glaucidium*), of which no example has yet been found in Great Britain, though there is a species found in Europe, viz., *Glaucidium passerinum.* The Pigmy Owlets occur in nearly every part of the World, with the exception of Australia and the Austro-Malayan Islands.



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I. THE LITTLE OWL. CARINE NOCTUA.

Strix noctua, Scop. Ann. i. p. 22 (1769).
Syrnia psilodactyla, Macgill. Br. B. iii. p. 417 (1840).
Carine noctua, Newt. ed. Yarr. Br. B. i. p. 178 (1872); Sharpe, Cat. B. Brit. Mus. i. p. 133 (1875).
Noctua noctua, Seebohm, Br. B. i. p. 174 (1883).
Athene noctua, Dresser, B. Eur. v. p. 357, pl. 317 (1871), B. O. U. List Br. B. p. 91 (1883); Lilford, Col. Fig. Br. B. part iii. (1886); Saunders, Man. Br. B. p. 291 (1889).

(*Plate XXXVII.*)

Adult Female.—Size small. Brown, with oval white spots, more or less concealed by the feathers of the upper-parts; quills brown, notched with white on the outer web, and barred with white on the inner one; upper tail-coverts brown, barred with white; tail-feathers brown, tipped with whitish, and crossed with four bands of whity-brown; head brown, streaked with triangular spots of white; a patch of white on the nape; face white, the ear-coverts marked with brown; under surface of body white, with a band of brown across the fore-neck, the breast and abdomen streaked with brown, the flanks with a few brown bars; under tail-coverts streaked with brown; quills brown below, spotted on the outer webs, and barred on the inner webs with yellowish-white; bill yellow, slightly tinged with greenish; feet greyish-yellow; iris yellow. Total length, 11·5 inches; wing, 6·7; tail, 3·5; tarsus, 1·3.

Adult Male.—Similar in colour to the female, but a trifle smaller. Total length, 8·5 inches; wing, 6·0; tail, 3·0; tarsus, 1·1.

Young Birds.—More dingily coloured than the adults, and more broadly streaked on the under surface; the white markings on the upper surface rather more distinctly indicated.

Range in Great Britain.—An accidental visitor to England only, not having, as yet, been recorded from Scotland or Ireland. The Little Owl is so often kept in confinement that escaped specimens cannot be rare, and consequently it is very difficult to say whether an occurrence of the species in England is due to an accidental visit from the Continent, or whether the individual in question has escaped from confinement. Fifty years ago Waterton set some specimens free in Yorkshire, and this experiment has been since tried by several naturalists, notably Mr. St. Quintin in Yorkshire, Lord Lilford in Northamptonshire, and Mr. Meade-Waldo in Hampshire.

Range outside the British Islands.—Europe generally, but only an occasional visitant to Scandinavia. In South-eastern Europe the colour is decidedly paler and a rufous race, *Carine glaux*, which is found in Egypt and Palestine, extends to Persia. Thence a race, with thickly-feathered toes, *C. bactriana*, takes its place in Central Asia, and ranges into Northern China.

Habits.—The Little Owl is as much diurnal as nocturnal in its habits, and feeds upon mice, small birds, and all kinds of insects, grasshoppers, moths, beetles, &c. I can cordially recommend this bird as a tame and amusing pet, and one which will speedily clear a kitchen of black-beetles. Two tame Owls of this species were most useful in this respect, as, unfortunately, in the suburb of London in which I resided some ten years ago, black-beetles were a very disagreeable reality. Hedgehogs in the kitchen at night were undoubtedly useful, but the best sport was obtained with my Little Owls, of which I had a pair. Every night the gas was turned low, and the Owls sat on our hands like trained Hawks. Their bright little eyes were turned in every direction, and the advent of a beetle was announced by a vigorous "bobbing" of their heads. Before I could see the noxious insect, the Owls would leave their perch on my hand and noiselessly glide down and capture the unsuspecting horror. Then they would stand over it, with one wing spread out, as if to protect the savoury morsel from the vulgar world, which knows not the delicacy of a black-beetle. Then grasping it in their toes, holding it like a Parrot, as if with a hand, they would munch it up contentedly, till not even an antenna was left to mark the place of slaughter. How many beetles one of these Owls would kill in an evening would be difficult to say. I used to leave them on the gas-bracket to work out their *rôle* of extermination, but the mess that they made during the night ended in a "revolt of the daughter," backed up by the servants, and they had once more to be banished to their cage in the garden.

Mr. Seebohm says that the flight of the Little Owl reminded him very much of that of a Bat. "It was not an undulating flight, but a steady, slow, beating of the wings, without any apparent exertion; and yet there was a butterfly-like uncertainty about it, as if it continually changed its mind and slightly altered its course. . . . . At Athens it was very common on the Acropolis, and was evidently breeding in holes in the rocks and ruins. In the Parnassus we often heard its curious note, *cuc-koo-vah'-ee, cuc-koo-vah'-ee*, and were told that it remained there all the year. It may be seen perched on a tree, a rock, or on the roof of a house."

Nest.—None, or a small collection of rubbish gathered in the vicinity. The Little Owl breeds from the middle of April to the middle of May, and the nest is placed in a hollow tree, or in the cleft of a rock, or in the roof of a house, and Mr. Seebohm says that he has seen one under the roots of a tree.

Eggs.—Four to six in number; pure white, and oval in shape. Axis, 1·3–1·4 inches; diam., 1·05–1·15.

With the next genus we commence the Sub-family *Syrniinæ*, to which it is difficult to apply an English name, as the Sub-family embraces Owls of very different appearance, some of them having ear-tufts, as in the genus *Asio*, while the Wood-Owls (*Syrnium* and *Nyctala*) have no tufts on the head. All the members of the *Syrniinæ* have the facial disk complete, extending as far above the eye as it does below it, and the ear-conch is larger than the eye, and is closed by a very distinct operculum.

THE HORNED OWLS. GENUS ASIO.

Asio, Briss, Orn. i. p. 28 (1760).
Type, *Asio otus* (L.).

These Owls are distinguished by the very distinct tufts of feathers, or "horns," on the head, which are always present, though they are longer in some species than in others. The cere is also strongly marked, and is longer than the culmen. Seven species of Horned Owls are known, and they are found in the greater part of the Old and New Worlds, but they appear to be absent in West Africa, the Malayan Sub-region, Australia, and Oceania, though a species occurs in the Sandwich Islands and another in the Galapagos Islands.

I. THE LONG-EARED OWL. ASIO OTUS.

Strix otus, Linn. Syst. Nat. i. p. 491 (1766); Seebohm, Br. B. i. p. 160 (1883).

Asio otus, Macg. Br. B. iii. p. 453 (1840); Newt. ed. Yarr. Brit. B. i. p. 158 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 227 (1875); Dresser, B. Eur. p. 251, pl. 303 (1876); B. O. U. List Br. B. p. 86 (1883); Saunders, Man. Br. B. p. 283 (1889); Lilford, Col. Fig. Br. B. part xxiii. (1893).

Adult Male.—Blackish-brown above, mottled all over with orange-buff; all the dorsal plumes silvered with white, with vermiculations of dark brown; scapulars and greater wing-coverts with a large oval spot of white on the outer web; quills greyish-brown, with hoary tips, barred with darker brown, more broadly on the primaries, which have the interspaces orange-buff, the dark bars more broken up on the secondaries; tail-feathers greyish-brown, with orange-buff at the base, and crossed with seven bands of darker brown, the bands being ten in number and narrower on the outer feathers; head pale orange buff, the feathers centred with black, and vermiculated with dusky on the sides; feathers on the sides of the neck much whiter, the cross-lines nearly obsolete; frontal feathers greyish-white, with minute brown frecklings; ear-tufts 1¾ inches long, blackish, more or less orange-buff on the outer web and white on the inner one; face dusky-white, the feathers round the eye blackish; feathers of ruff white, all the feathers tipped with black, forming a frill; chin whitish; rest of under surface of body orange-buff, the breast-feathers for the most part white, centred longitudinally with blackish-brown, with a few cross vermiculations; bill dusky horn-colour; claws horn-colour; iris orange-yellow. Total length, 13·5 inches; wing, 11·6; tail, 6·0; tarsus, 1·6.

Adult Female.—Similar to the male in colour and of about the same size. Total length, 14 inches; wing, 11·5; tail, 6·5; tarsus, 1·6.

Young.—Coloured like the adults, but the markings not so pronounced. The nestling is covered with grey down, with a good deal of orange-buff.

The slender body, with the long ear-tufts, the black streaks on the breast-feathers, and the blackish cross-markings on the plumage, distinguish the Long-eared Owl from all the other British species. Its smaller size prevents its being mistaken for the Great Eagle-Owl.

Range in Great Britain.—Wherever pine-woods or fir-plantations occur throughout the British Islands, the Long-eared Owl is to be found, and there is scarcely a county in which it is not a resident, while in Ireland, Mr. Ussher states that it is common in most counties, and breeds in every one of them. It nests in the Hebrides in favourable localities, but is only a visitor to the Orkneys and Shetland Islands. A considerable increase in the number of the species takes place in the autumn, when a good many migrate into our islands.

Range outside the British Islands.—In its favourite haunts, the present species is distributed over the greater part of Europe, and extends throughout Southern Siberia to the Japanese Islands, occurring also in the Himalayas, where it appears to breed, and it winters in wooded districts in the plains of India. In Scandinavia and Northern Russia it ranges as high as 63° N. lat. and to 59° in the Ural Mountains. The birds which breed in many parts of Europe are only found to do so in the mountain forests, and in winter they descend to the lower ground. The species is also found in the Azores, Madeira, and the Canaries, and also inhabits Northern Africa. In North America the Long-eared Owl is replaced by a darker race, *Asio americanus*.

Habits.—This Owl is a strictly nocturnal species and is seldom found in the day-time, though, if disturbed and frightened, it will fly out into the daylight, which does not seem to inconvenience it much. As evening closes in, however, it becomes more active, and commences to hunt in the twilight. It seems never to make a nest for itself, but will appropriate the old nest of any other bird which appears suitable. Thus the nests of Crows, Magpies, Sparrow-Hawks, or Wood-Pigeons may be used, and these are merely slightly flattened, and a little wool is sometimes found in them, as well as the pellets or castings of the birds. In many of the fir-clumps on the downs of our southern counties, a pair of Long-eared Owls may be found, the nest being in the most retired and darkest portion of the clump, where no sunlight penetrates. Here the Owls rest during the day, either side by side, or perhaps drawn up against the trunk of a fir, and perfectly motionless. On the approach of dusk, however, their awakened interest is manifested by a snapping of the bill, a noise which can be heard a long way off; and they may be seen quartering over the ground with a slow and noiseless flight, though I have never seen them play or tumble in the air, as Barn-Owls will often do. They never appear to hoot, but are described as uttering a barking kind of note, and also "mewing" like a young kitten. Mr. Norgate, who has contributed some interesting notes on the species to Mr. Seebohm's "History of British Birds," believes that this "cat"-like note is that of the young birds, but at Avington in Hampshire, where Captain Shelley and myself have found several nests, this noise, which Mr. Norgate has so correctly described, was often heard by us, but there were no young in the nests we examined, and therefore it is probably also uttered by the old birds. The food of this species consists of mice, rats, and small birds.

The Long-eared Owl breeds early in the year, and eggs have been found at the end of February. Besides the above-mentioned nests adopted by the species, it will also occupy an old Squirrel's drey, or even the nest of a Heron.

Nest.—As mentioned above, this species does not build a nest itself, but uses the old nest of a Squirrel or some bird.

Eggs.—From four to six, sometimes seven. They are somewhat oval in shape, pure white, and slightly glossy. Axis, 1·5–1·8 inch; diam., 1·15–1·35 inch.

II. THE SHORT-EARED OWL. ASIO ACCIPITRINUS.

Strix accipitrina, Pall. Reis. Russ. Reichs. i. p. 455 (1771).
Asio brachyotus (Forst.), Macg. Brit. B. iii. p. 461 (1840); B. O. U. List Br. B. p. 86 (1883); Lilford, Col. Fig. Br. B. part xi. (1889).

Asio accipitrinus, Newt. ed. Yarr. Brit. B. i. 163 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 234 (1875); Dresser, B. Eur. v. p. 257, pl. 304 (1876); Saunders, Man. Br. B. p. 285 (1889).

Strix brachyotus, Seeb. Br. B. i. p. 167 (1883)

Adult Male.—General colour above pale ochraceous-buff, with longitudinal dark brown centres to the feathers, imparting a streaked appearance; scapulars much paler on their outer margins; quills rufous-ochre, tipped with whitish, and inclining to fulvous near the base, all the feathers chequered with dark brown bars, much narrower on the inner web; tail-feathers ochraceous, tipped with whitish, and crossed with seven continuous brown bars on the centre ones, reduced to five on the outer ones, where the bars are much narrower and disappear near the base; plumes of forehead dark brown, narrowly margined with ochraceous; facial ruff whitish, slightly washed with ochre, and having minute triangular spots of dark brown; facial aspect dull white, the lores brownish, the region of the eye black; ear-tufts half an inch long and coloured like the crown; chin whitish; remainder of under surface of body buffy-white, washed with golden-buff on the breast and sides, the breast-feathers broadly streaked with brown down the centre, these streaks becoming very narrow on the lower breast and abdomen, and disappearing on the thighs and under tail-coverts; under wing-coverts white, faintly tinged with ochre, with a blackish patch on the outer lower greater coverts; bill brownish-black; claws brownish-black; iris orange. Total length, 14 inches; wing, 12·4; tail, 6·5; tarsus, 1·75.

Adult Female.—Similar in colour and markings to the male, but deeper in colour, especially on the under surface, which is rich ochre; the bands on the centre feathers six in number, four or five on the outer ones. Total length, 15·5 inches; wing, 12·5.

Young Birds.—Similar to the adults, but much darker, and having the quills underneath clouded with brown, without any transverse bars, and having a dark brown spot or bar about half way down the first primary.

The Short-eared Owl is easily distinguished from the Long-eared Owl by the shortness of the ear-tufts and by the absence of minute cross-vermiculations, which are so plentiful in the Long-eared Owls, the feathers being broadly striped with brown both above and below.

Range in Great Britain.—The Short-eared Owl breeds in such haunts as are suitable to it in the north of England and in Scotland, as well as in the Orkneys and Shetlands. It also nests sparingly in the eastern counties of England. In Ireland it occurs as an autumn and winter visitant, but is not included as a breeding species in the latest list of Mr. R. J. Ussher. Over the greater part of England it is chiefly met with in autumn and winter, when a considerable migration of the species takes place.

Range outside the British Islands.—Unlike the Long-eared Owl, the present species has not been recorded from Iceland, though it occasionally wanders to the Færoe Islands. It nests throughout Northern Europe, and even in South Russia and the Caucasus, while it probably breeds throughout Northern Asia, as it has been found to do so in Eastern Siberia and Kamtchatka. Throughout the central and southern countries of Europe it is known as a migratory species, and it also passes through China on migration, to winter in Southern China, Burma, and the Indian Peninsula.

In the New World the Short-eared Owl is found from the Arctic Regions to the very extreme of South America. Slightly modified forms are met with—*Asio galapagensis*, in the Galapagos Islands, and in the Sandwich Islands, *Asio sandwichensis*. A dark species, *Asio capensis*, is met with in South Africa, and occurs also in Marocco and Southern Spain, and is said to interbreed with our own Short-eared Owl. With the exception of Australia and the Malayan Peninsula and islands, our bird may be said to have an almost cosmopolitan range, though it is doubtful whether it ever extends in winter below North-eastern Africa, the sole evidence of its having been met with in South Africa resting on a specimen sent alive to the Zoological Gardens many years ago, and said to have come from Natal.

Habits.—In winter time and during the shooting-season, the

Short-eared Owl is often flushed in open ground, such as turnip-fields, especially towards the end of October, when the general migration of the species takes place in England, about the time of the coming-in of the Woodcock. From the latter circumstance it is probably called in so many places the "Woodcock" Owl, or this name may also be acquired by its similarly twisting flight. It is essentially a bird of the open, and I have even seen it on the south coast, frequenting the banks and reedy ditches of Pagham Harbour in Sussex, where I once shot an early migrant on the 3rd of September. It flies well in the daylight, and may often be seen hunting for food in the full glare of the sun, which seems to incommode this species but little. It feeds on all the small Rodents, and was of great use during the vole-plague in 1892, when the Short-eared Owls came to the rescue of the farmers, and as many as four hundred of their nests were found in the infected districts of Southern Scotland. The same flocking of Owls occurred during a similar plague many years ago in the Forest of Dean in Gloucestershire. The Short-eared Owl is also said to feed on small birds, as well as occasionally on bats, fish, reptiles, and beetles. During his recent expedition to the Salvage Islands, which lie between Madeira and the Canaries, Mr. Ogilvie-Grant found two pairs of Short-eared Owls on the largest island of the group, where they found plenty of food in the shape of a powerful little mouse, which fed in turn on the unfortunate Petrels (*P. marina*) which were breeding in numbers on the summit of the rocky island.

Nest.—On the ground, often in quite an exposed situation. No regular nest is made, the eggs being laid in a depression of the ground, or in a tuft of heather, in the moorland districts.

Eggs.—From six to eight in number, and sometimes as many as twelve have been found. They are generally laid in May, but have also been found as early as the first week in April. The eggs are very much like those of the Long-eared Owl, white, and with scarcely any gloss. Mr. Seebohm says that some examples can scarcely be distinguished from those of the Hawk-Owl. Axis 1·55–1 65 inch; diam., 1·2–1·3.

THE WOOD-OWLS. GENUS SYRNIUM.

Syrnium, Savign. Descr. de l'Egypte, p. 208 (1809).

Type, *S. aluco* (L.).

Although the Wood-Owls have the same curious ear-conch as the Horned Owls, they may easily be distingushed from the latter by the absence of ear-tufts, and by the cere being shorter than the culmen. The bony shell of the ear-conch is similar in form on either side of the skull, both sides of which are symmetrical, whereas in *Nyctala* (*vide infrà*, p. 103) the opposite is the case.

The Wood-Owls are found all over the New World from north to south, and also over the greater part of the Old World, with the exception of the Australian Region.

I. THE WOOD-OWL, OR TAWNY OWL. SYRNIUM ALUCO.

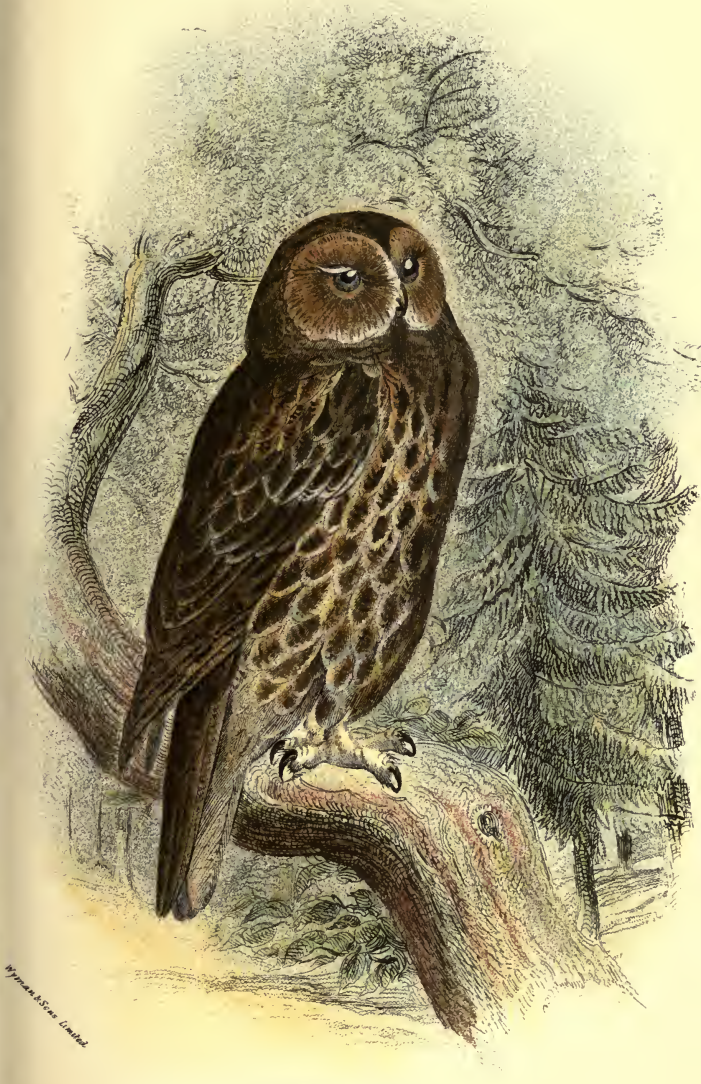
Strix aluco, Linn. Syst. Nat. i. p. 132 (1766); Newton, ed. Yarr. Br. B. i. p. 146 (1872).

Ulula aluco, Macg. Br. B. iii. p. 438 (1840); Seeb. Br. B. i. p. 154 (1883).

Syrnium aluco, Sharpe, Cat. B. Brit. Mus. ii. p. 247 (1875); Dresser, B. Eur. v. p. 271, pl. 306 (1879); B. O. U. List Br. B. p. 87 (1883); Saunders, Man. Br. B. p. 287 (1889); Lilford, Col. Fig. Br. B. part xi. (1889), parts xxii. and xxv. (1892–93).

(*Plate XXXVIII.*)

Adult Male.—General colour above ashy-grey, with generally a slight tinge of rufous, the feathers with dark longitudinal centres and zigzag cross-lines, imparting a vermiculated appearance to the whole of the upper surface; outer scapulars with a large oval spot of white; quills light brown, barred with darker brown, the quills freckled with dusky at the tips, and on the light ashy or rufescent bars which are seen on the outer web; tail brown, mottled with ashy spots and lines, the outer feathers with dark brown bars, about six in number; head rather greyer than the back, considerably mottled with white spots, especially on the hind-neck; lores and feathers round the eye whitish; ear-coverts ashy with dusky-brown bars; tail-feathers profusely barred with white or buffy-white and dusky-brown; under surface of body ashy-white, with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TAWNY OWL.

distinct black longitudinal centres to the feathers, which are also laterally barred and freckled, but not always completely banded; quills dark brown below, with about six lighter bars, those near the base yellowish-white; bill whitish horn-colour; claws horny-white at base, darker at tip; iris blue-black.

Rufous Phase.—Exactly like the grey phase in plumage, but rufous where the other is grey or brown.

Nestling.—Covered with greyish-white down, the first feathers yellowish, with dark-brown cross-markings; bill ivory-white at the end of both mandibles.

Range in Great Britain.—The Tawny Owl is found in most of the wooded districts of Great Britain, though it is said to be decreasing in numbers, owing to the persecution it is subjected to on account of its supposed destructiveness to game. It is, perhaps, more plentiful in the northern districts of England than in the south, and is distributed over the greater part of Scotland, as well as the Isle of Skye and some of the inner Hebrides. It has not been found in Ireland.

Range outside the British Islands.—Distributed throughout the greater part of Europe and Northern Africa, and extends to Palestine and Syria. It is plentiful in Norway up to Trondhjem Fiord, but is rarer to the north. In Sweden it is not found so far north, and does not extend to Archangel. In Eastern Russia the limit of its range is said to be lat. 58°, and it has been met with in the Caucasus, but not, so far as known, in Siberia. In the Himalayas it is represented by a distinct form, *Syrnium nivicolum*, and this is probably the species which occurs in Turkestan. Mr. Seebohm considers this eastern form of the Tawny Owl to belong to the same species as our European bird, but in this conclusion he is certainly mistaken.

Habits.—The Tawny Owl is, as a rule, nocturnal in its habits, and seldom flies in the daylight. If, by any accident, it has been driven from the dark recesses in which it loves to pass the day, it may be seen perched on a large bough or against the trunk of a tree, absolutely immoveable, and apparently incapable of any action in the sunlight. Usually, however, it seeks repose in the day-time in some dark hollow of an ancient tree. As night approaches, the Tawny Owl becomes more active, and its note is often heard—"hoo-hoo, hoo-hoo-hoo," a wailing cry, which resounds to a considerable distance, and is certainly not one of the least interesting sounds of a still summer night.

The food of the Tawny Owl consists of small Rodents and insectivorous Mammals which stir forth in the dark, and it will also eat frogs and fish, and occasionally small birds, while its occasional onslaughts on young game-birds and rabbits are not to be gainsaid.

Nest.—In defence of its nest this Owl is sometimes very bold, and will swoop down and attack the intruder. The nesting-place is very varied, and although generally to be found in a hollow tree or an old ivy-covered ruin, or even an outhouse, the bird will sometimes select an old nest of some other bird, such as a Rook, a Magpie, or a Sparrow-Hawk, while its nesting in rabbit-burrows has also been chronicled, to say nothing of such curious sites as a disused dog-kennel, as related by Mr. A. W. Johnson in Mr. Seebohm's work on British Birds. The same gentleman also states that he has known the eggs to be laid on the bare ground, "somewhat concealed by the thick foliage of the lower branches of a fir."

Eggs.—Three or four in number; white, smooth, and rather glossy. Axis, 1·75–1·95 inch; diam., 1·5–1·6.

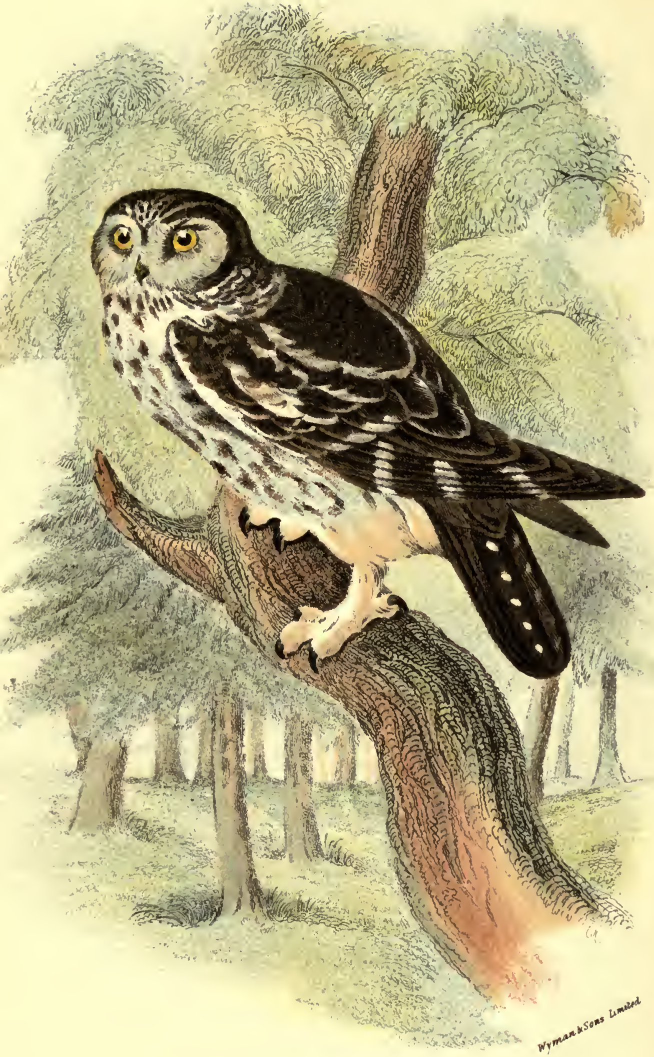
THE DOWNY OWLETS. GENUS NYCTALA.

Nyctala, Brehm, Isis, 1828, p. 1271.

Type, *N. tengmalmi* (Gm.).

The species of the genus *Nyctala* are diminutive representatives of the Wood-Owls, but they differ from all the species of the genus *Syrnium* in their small size, and in the curious conformation of the ear-conches, which are different on either side of the head, as has been pointed out by Professor Collett, of Christiania.

This may have something to do with the sense of hearing in the genus *Nyctala*, but nothing is known on this point. Apart from the small size of the birds, the thick feathering of the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TENGMALM'S OWL.

toes distinguishes *Nyctala* from *Syrnium*, as far as the British avifauna is concerned.

The Saw-whet Owl (*Nyctala acadica*) of North America has been said to have occurred in Yorkshire, but the occurrence is not considered genuine.

I. TENGMALM'S OWL. NYCTALA TENGMALMI.

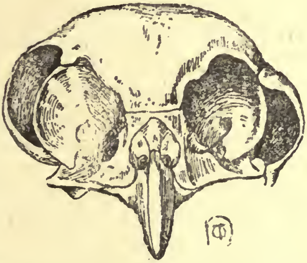
Strix tengmalmi, Gm. Syst. Nat. i. p. 291 (1788); Seeb. Br. B. i. p. 164 (1883).

Ulula tengmalmi, Macgill. Br. B. iii. p. 445 (1840).

Nyctala tengmalmi, Newt. ed. Yarr. Br. B. i. p. 154 (1872); Dresser, B. Eur. v. p. 319, pl. 313 (1872); Sharpe, Cat. B. Brit. Mus. ii. p. 284 (1875); B. O. U. List Br. B. p. 88 (1883); Saunders, Man. Br. B. p. 289 (1889); Lilford, Col. Fig. Br. B. part xxx. (1895).

(*Plate XXXIX.*)

Adult Male.—General colour above light brown, plentifully spotted and mottled with white, especially on the scapulars, where the white markings are very conspicuous; fore-part and sides of crown rather darker than the back, with numerous triangular spots of white, with a "wig" of looser plumes on the hind-neck, where the plumage is fuller, these parts being barred with white; the median and greater coverts with large oval spots of white on the outer web; quills brown, tipped with greyish, spotted on the outer web, and broadly notched on



Skull of Tengmalm's Owl, to show the position of the ear-conches (after Collett).

the inner web with white; tail brown, with five rows of white bars; face white, with the lores and a large patch in front of the eye black; ruff very distinct, and composed of dark brown feathers, thickly spotted with white; this ruff continued under the chin, which is white, as also the fore-neck; remainder of under surface of body white, mottled with brown markings, especially on the breast, the flanks streaked with brown, the breast more spotted; under wing-coverts white, with small brown spots; the greater series ashy-brown, spotted with white, like the inner lining of the quills, which are ashy-brown below, barred with white, the bars larger and more ovate on the secondaries; bill dull yellow; iris bright yellow. Total length, 9·5 inches; wing, 6·7; tail, 4·4; tarsus, 0·75.

Adult Female.—Similar to the male, but slightly larger. Total length, 10·5 inches; wing, 7·5; tail, 4·8; tarsus, 0·85.

Young.—Differs considerably from the adult. Chocolate-brown, darker on the sides of the face and ear-coverts; lores, fore-part of cheeks, and eyebrow white, with blackish bristles on the former; scapulars and upper tail-coverts with concealed white spots; tail brown, with three rows of white spots, not continuous; under surface of body chocolate-brown, the breast and abdomen mottled with white; feathers of the thighs and feet, as well as the under tail-coverts, yellowish white, with a few brown spots.

Tengmalm's Owl is often confounded with the Little Owl (*Carine noctua*), but there ought to be no difficulty in distinguishing the two species. Both are devoid of horns, like the Tawny Owl, but Tengmalm's Owl is a more northern bird, and more thickly clothed with feathers than the southern Little Owl. The plumage is altogether more dense and softer in the first place, and the species can at once be distinguished by the feathering which covers the toes, leaving the claws only discernible. In the Little Owl the feathering of the toes is much more sparse, and the joints of the toes are plainly visible. Tengmalm's Owl is also a darker bird, and is very plainly spotted with white on the head, and especially on the facial ruff. The face, too, is pure white, with a very conspicuous black patch on the lores and in front of the eyes.

Range in Great Britain.—An occasional visitor in spring and autumn. Less than twenty authentic records of the occurrence of the species within our limits have been published; and probably not more than sixteen or seventeen are genuine. The counties in which Tengmalm's Owl has been captured are Northumberland, Yorkshire, Norfolk, Suffolk, Kent, and Somerset, Shropshire, Lancashire, and Cumberland, most of these instances having occurred during autumn. Two Scottish records are known, one in the Orkneys, and one in the Firth of Forth, but no specimen has yet been procured in Ireland.

Range outside the British Islands.—Tengmalm's Owl is an inhabitant of the mountain regions of the Old and New Worlds, for I have never been able to discover the specific distinctness of the American form, the so-called *Nyctala richardsoni*. It is an inhabitant of the pine-forest region south of the Arctic Circle from Scandinavia to Eastern Siberia, and again in North America. In Lapland it breeds as far north as 68° N. lat., in the Ural Mountains up to 59° N. lat. On the River Ob Dr. Finsch obtained it in lat. 61°, and Mr. Seebohm's collectors have sent specimens from Krasnoyarsk in Siberia. The species is plentiful in Eastern Siberia round Lake Baikal, and also as far as Sidemi in Ussuri Land, but has not yet been detected in Kamtchatka

In winter Tengmalm's Owl migrates to a certain extent, but is not found very far to the south. It breeds in the Carpathians and the Alps in the forests, as well as in the Vosges and the mountains of South-eastern France.

Habits.—Although principally a nocturnal species, Tengmalm's Owl does not appear to be incommoded by the daylight; and, indeed, in the northern localities where the species breeds, the sun never sets, and there is scarcely any difference between night and day. Its food consists of small rodents, such as mice and lemmings, as well as insects and small birds, and Taczanowski states that in Eastern Siberia this little Owl is detested by the trappers, as it is continually being taken in the snares set for the Ermine, and the bird is therefore considered a nuisance.

Wheelwright says that the note of Tengmalm's Owl is a soft whistle, which is heard only in the evening and at night.

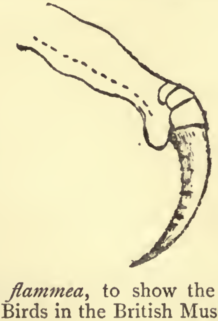
M. Godlewski, a well-known Siberian traveller and collector, speaks of one of these birds which became very tame in confinement, and imitated the crowing of a cock, the howling of a dog, and the cries of other domestic animals.

Nest.—None. The eggs are generally placed in a hollow tree, the holes of the Great Black Woodpecker being often used; and Wolley, to whom we owe much of our knowledge of the breeding habits of the present species, obtained some eggs from the nest-boxes which are put by the inhabitants for the Golden-eye Duck to breed in. These nesting-places are formed of pieces of logs, hollowed out and with a hole cut in the side. The bird breeds early in May, even in its northern home, and eggs were taken by Wolley at the end of May and during June.

Eggs.—From four to seven, and, Mr. Howard Saunders says, occasionally as many as ten. They are white, and vary in shape, some being rounder and some more elongated. Axis, 1·3 inch; diam., 1·05.

THE WHITE OWLS. FAMILY STRIGIDÆ.

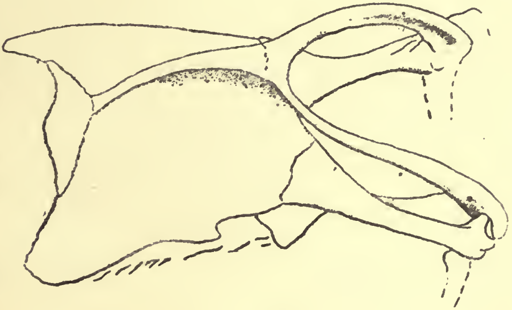
Apart from their peculiar and unmistakeable visage, the White Owls differ from all the other members of the Order *Striges* in two easily recognisable characters. One of these consists in having the inner and middle toes of about equal length, while the middle toe has a pectinated or comb-like edge on its inner aspect.



Middle toe of *Strix flammea*, to show the pectination of the claw. [From the Catalogue of Birds in the British Museum, vol. ii. p. 290.]

Another character is seen in the sternum, or breast-bone, which has no fissures or clefts in its hinder margin, and at the same time the furcula, or "merry-thought," is joined to the keel of the sternum.

The White Owls are almost cosmopolitan, and are found even in the Pacific Islands. There are two sections of White Owls, which may be distinguished as Barn-Owls and Grass-Owls, the latter, as their name implies, frequenting dense grassland. Both the known species of Grass-Owls are easily recognised by their uniform brown upper surface, instead of having vermiculations on the back, like the Barn-Owls, and they are often separated by naturalists under a separate genus, *Scelostrix*. One of the species, *S. capensis*, inhabits South Africa, while the second, *S. candida*, is found in India and China, the Philippines, North Australia, and re-occurs in the Fiji Islands.



Sternum of *Strix flammea*, to show the junction of the furcula and the outline of the hinder margin. [From the Catalogue of Birds in the British Museum, vol. ii. p. 289.]

THE BARN-OWLS. GENUS STRIX.

Strix, Linn. Syst. Nat. i. p. 133 (1766).

Type, *S. flammea* (L.).

The Barn-Owls, on the other hand, are birds which love the dark recesses of a building or a tree, rather than the open grass-country. Seven forms of the Common Barn-Owl are recognised by naturalists, but these birds vary in plumage considerably, and they are all so closely connected by intermediate forms, that it is difficult to say where one race ends and another commences its range.

The most distinct of the Barn-Owls are the large *Strix castanops* and *S. novæ hollandiæ* of Australia, all the other species being merely forms of the ordinary Barn-Owl (*S. flammea*). Some of these, however, are fairly recognisable as races, especially the pale form, *S. delicatula*, of Australia and Oceania, and the island races from the Cape Verd Islands (*Strix insularis*), and the Galapagos Islands (*Strix punctatissima*), both of which are very dark and thickly-spotted forms.

I am still under the same impression as in 1875, when I wrote the second volume of the "Catalogue of Birds," that "there is one dominant type of Barn-Owl which prevails generally over the continents of the Old and New Worlds, being darker or lighter according to different localities, but possessing no distinctive specific characters."

I. THE BARN-OWL. STRIX FLAMMEA.

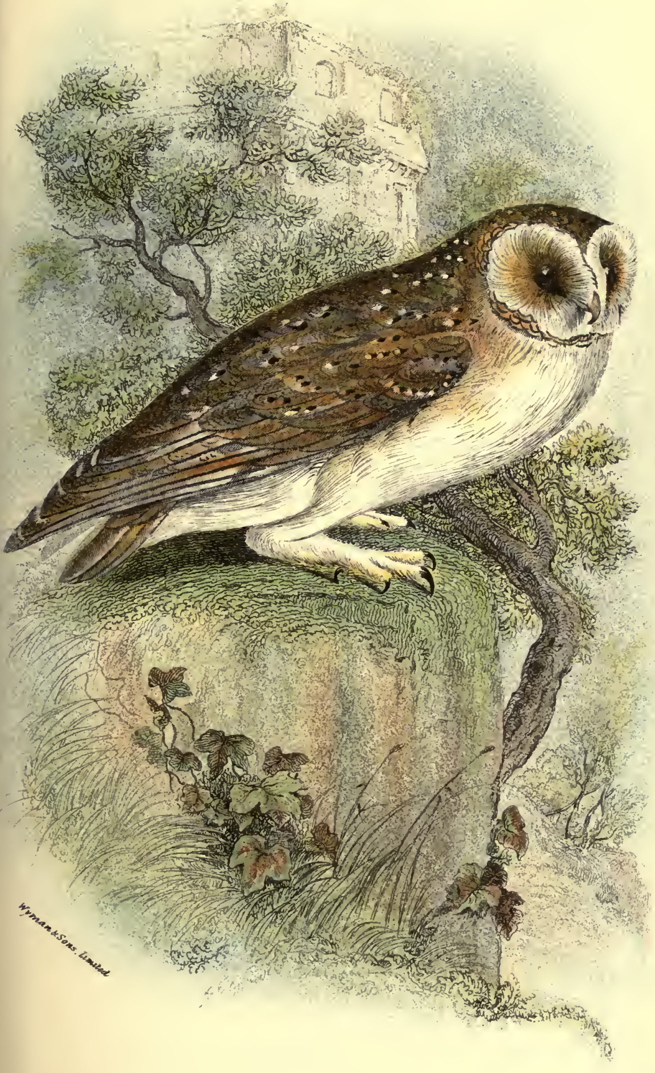
Strix flammea, Linn. Syst. Nat. i. p. 133 (1766); Macgill. Brit. B. iii. p. 473 (1840); Sharpe, Cat. B. Brit. Mus. ii. p. 291 (1875); Dresser, B. Eur. i. p. 237, pl. 302 (1879); B. O. U. List Br. B. p. 85 (1883); Saunders, Man. Br. B. p. 281 (1889); Lilford, Col. Fig. Br. B. part xiv. (1890).

Aluco flammeus, Newt. ed. Yarr. Brit. B. i. p. 194 (1872); Seeb. Brit. B. i. p. 148 (1883).

(*Plate XL.*)

Adult Male.—General colour above orange-buff, with white spots at or near the end of each feather, relieved by a corresponding spot of blackish; the back and scapulars mottled with silvery-grey; quills orange-buff, shading off into whitish near the base and on the inner webs, the secondaries rathe deeper orange, tipped with whitish, the innermost secondarie mottled with grey like the back; tail whitish, washed with pal orange, the centre feathers slightly speckled with brown, thes markings disappearing towards the outer feathers, which ar

PLATE X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BARN OWL.

entirely white; face pure white, with a patch of rufous in front of the eye; feathers of the ruff glistening white, those on the upper-part washed with orange, the lower feathers sub-terminally orange with a tiny apical margin of blackish, rather more distinct on the gular portion of the ruff; rest of under surface of body pure white, as well as the thighs and under tail-coverts; under wing-coverts also white, the lower primary coverts greyish, like the lower surface of the quills, which are greyish-white underneath; bill nearly white; claws brown; iris black. Total length, 13 inches; wing, 11·9; tail, 5·0; tarsus, 2·2.

Adult Female.—Similar to the male. Total length, 13 inches; wing, 11·0.

The above description refers to the ordinary Barn-Owl as it is usually seen in England; but on the continent of Europe a darker form occurs, remarkable for its dark grey upper surface, whereon very few of the lighter markings and spots are discernible, while the under surface is also deep orange, with numerous "arrow-head"-shaped spots of dusky-brown. This dark form is occasionally found in Great Britain, but very rarely, and these individuals may be visitors from the Continent, perhaps from Schleswig, where only the dark phase of the Barn-Owl is met with. Mr. De Winton recently presented to the British Museum a pair of birds from Workum in Friesland, which proved to be a male and female of the dark-phased Barn-Owl, showing that the difference between the light and dark forms is not dependent on age or sex, as indeed is known from both males and females of our British bird being white-breasted.

Nestling.—Covered with pure white down, the face slightly rufescent.

Range in Great Britain.—The Barn-Owl is found all over Great Britain, and breeds in all the counties of England and sparingly also in every county of Ireland. In Scotland, too, it is found nesting in small numbers as far north as Caithness and in the Inner Hebrides, but in decreasing numbers beyond the Lowlands.

Range outside the British Islands.—As already stated, the Barn-Owl is nearly cosmopolitan, but it does not range very far north, either in the Old or New Worlds; about 40° N. lat. and 40° S. lat. being the limit of the Barn-Owl on the American continents. In many places it is a local bird, and seems to extend its range with civilisation, following in the footsteps of man, in the vicinity of whose homesteads are abundance of mice.

In Europe the Barn-Owl nests no farther north than the south of Sweden and the Baltic Provinces. It extends to Central Russia and is then apparently absent throughout the whole of Siberia and Northern Asia, as well as China. It is likewise unknown in Greece and the countries of South-eastern Europe, but is found in Northern Africa and Palestine, and throughout the whole of Africa. It likewise extends in slightly modified forms over the entire Indian and Australian Regions, being also found in the islands of Oceania.

Habits.—The Barn-Owl is a nocturnal species, and never ventures out in the daylight of it own accord. In the twilight, however, it issues forth, and in Avington Park in Hampshire, where the late Sir Edward Shelley protected them, I have seen two and three of these pretty birds flying about in the early evening, over the bracken, and playing with each other in the air. Their movements were full of grace and activity, as they sailed over the ferns and gambolled with each other in the most playful manner. The number of mice which a Barn-Owl catches in a single night is truly astonishing. Waterton says that the birds will bring a mouse to their nest every twelve or fifteen minutes, and a nest in Avington Park was found by us to have over forty freshly-killed field-mice, which must have been caught during the preceding night. Where encouraged the present species will take advantage of any tub or shelter put up for its accommodation, and will nest freely.

The food of the Barn-Owl consists principally of mice, but it will also catch rats and bats, as well as voles and shrews, and small birds, while it has also been known to take fish. It is a great friend to the farmer and gardener, and does no harm to game, so that it ought to receive protection from every landed proprietor and game-preserver; instead of which it is to be feared that ignorant prejudice against the Owls still contrives the slaughter of a number of these useful birds, although of late years their services in the destruction of vermin has been more generally recognised.

Nest.—None. Sometimes the eggs are surrounded by cast-up pellets, but no regular nest is made. The eggs are laid in May, seldom as early as April, but young birds have been found as late as November and December.

Eggs.—From three to seven in number; white, with little or no gloss. Axis, 1·5–1·7; diam., 1·1–1·3.

THE BIRDS OF PREY. ORDER ACCIPITRES.

Without fully enumerating the many anatomical and osteological characters which distinguish these birds, it is sufficient to note that Accipitrine Birds have a desmognathous, or "bridged," palate, and the external characters are easily recognisable. Thus the hooked and raptorial bill is peculiar to the Birds of Prey, taken in conjunction with the cere, or bare skin at the base of the bill. The Passerine Family of Shrikes, or *Laniidæ* have also a hooked or raptorial bill, but they have no cere, and lack the powerful talons which are also a conspicuous feature in the *Accipitres.* The young birds are covered with down, and remain in a helpless condition in the nest for a considerable period, being nurtured by the old birds on animal food. As a general rule, the female is a larger and more powerful bird than the male.

THE OSPREYS. SUB-ORDER PANDIONES.

The Ospreys occupy an intermediate position between the Owls and the typical Birds of Prey. The skeleton is especially Owl-like; but the eyes are placed laterally in the head, and there s no facial disk. Like the Owls, however, the outer toe is reversible, and is capable of being turned forwards or backwards, a great advantage to a fish-catching bird, and the sole of the foot is covered with numerous small spicules, which are of great advantage to the Osprey in holding its finny prey.

The range of the Ospreys is almost cosmopolitan, and there s only one species representing the Sub-order. The Osprey of Australia and the Moluccas is a smaller bird, but cannot be considered a distinct species, while the American Osprey I consider to be absolutely identical with the ordinary bird of the Old World.

There is but one genus in the Sub-order, namely the genus

Pandion, Savigny, Descr. de l'Egypte, p. 272 (1809).
Type, *P. haliaëtus* (L.).

the characters of which have been alluded to above.

I. THE OSPREY. PANDION HALIAËTUS.

Falco haliaëtus, Linn. Syst. Nat. i. p. 129 (1766).
Pandion haliaëtus, Macg. Brit. B. iii. p. 239 (1840); Newton, ed. Yarr. Brit. B. i. p. 30 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 449 (1874); Dresser, B. Eur. vi. p. 139, pl. 387 (1876); Seeb. Br. B. i. p. 55 (1883); B. O. U. List Br. B. p. 105 (1883); Saunders, Man. Br. B. p. 347 (1889).

Adult Male.—General colour above dark brown, the feathers with indistinct edges of paler brown; quills blackish, the primaries uniform whity-brown below, the secondaries whitish on the inner web, and indistinctly barred with ashy-brown; tail almost uniform brown, the inner webs whitish with obsolete bars of ashy-brown; head brown, mottled with white bases to the feathers; from behind the eye a broad white streak, extending down the sides of the neck; the ear-coverts blackish-brown; sides of neck like the back; sides of face and under surface of body white, the chin and fore-part of cheeks slightly streaked with dark-brown; breast with brown centres to the feathers; some of the flank-feathers and the axillaries marked with rufous-brown, like the breast; bill black, the cere blue; feet blue; iris yellow. Total length, 24 inches; culmen, 1·75; wing, 19·8; tail, 9·5; tarsus, 2·4.

Adult Female.—Resembles the male in colour. Total length, 21 inches; wing, 19·0.

Young.—Chocolate-brown, the feathers plainly edged with buffy-white, more broadly on the secondaries and upper tail-coverts; crown black, with white edges to the feathers, imparting a streaked appearance; nape white; tail-feathers brown tipped with white, and barred with sepia-brown and ashy-brown alternately.

Nestling.—Covered with sooty-brown down, the down of the centre of the back, along the bend of the wing, and on the breast and flanks dusky white; the dorsal feathers dark brown, broadly tipped with ochraceous-buff; crown and ear-coverts blackish; eyebrow and throat white.

Range in Great Britain.—Though formerly said to breed on the south coast of England, and in the Lake district up to within a century ago, the eyries of the species are now confined to a few places in Scotland. The species is, in fact, threatened with extinction in the British Islands, as its eggs still command a high price, and therefore afford a strong temptation to the keepers of those few places in Scotland in which the species is still preserved. At present, however, the Osprey breeds in Scotland, but it is only owing to the intelligent protection of a few landowners that the species has persevered so long as an indigenous British species.

A considerable number of Ospreys occur in various portions of our islands, on the inland lakes and the sea-shores, especially in the estuaries of our southern rivers, and usually in autumn. Most of these specimens are young individuals, and it is only during these wanderings that the Osprey has occurred in Ireland at all, though, as Mr. Howard Saunders remarks, there are in that island numbers of suitable places for its nidification.

Range outside the British Islands.—The Osprey is found in nearly every part of the world, but only in places suited to its shy habits, and affording it a supply of its food. It breeds throughout Europe, Asia, and Africa, but in the latter continent it is probably only a migrant, though it nests on the Dahlak Islands in the Red Sea. In Australia and the neighbouring Moluccas, the Ospreys are smaller and rather darker in plumage, and have been separated as a distinct species under the name of *Pandion leucocephalus*. The Australian Ospreys, however, can only be looked upon as a smaller race of our European bird.

Habits.—The food of the Osprey consists entirely of fish, and on inland waters it catches any kind that can be reached easily near the surface of the water, from Salmon and Trout downwards to the smaller species. Its spiky soles and powerful talons enable it to hold the fish in security, and so tightly does it grasp its prey that the talons are unlocked with difficulty, and instances have been known of the bird having been carried below the water and drowned, when it has struck a fish stronger than itself.

The favourite breeding-haunt of the Osprey is a forest where there is water in the vicinity, in which it can obtain a sufficient supply of fish, and solitude and quiet are the conditions which it loves best. In America, and even in certain parts of Europe, the bird is gregarious, and several pairs nest in company. Mr. Seebohm mentions an instance in which he observed them thus nesting on an island in a Pomeranian lake, and in North America as many as three hundred pairs of Ospreys have been known to breed in a similar situation. When hunting for its prey, this large Fishing-Eagle goes to work very much like a gigantic Kestrel, sailing quietly along above the water, and occasionally hovering over it, and then descending on the fish with a plunge which can be heard for a long distance. The bird is said often to disappear beneath the surface of the water, while at other times it appears to catch the fish with its talons without wetting its feet to any great extent. The close-set feathering of the thighs and the bare tarsus and toes are different from the general aspect of an Accipitrine bird's leg, but the long thigh-feathers and feathered feet of an ordinary Eagle would be decidedly a drawback to a bird like the Osprey, whose legs are so often in the water.

Nest.—This is a gigantic structure, whether it be placed on a tree or on some ruin in an inland lake. Mr. Seebohm writes: "From the great weight and bulkiness of the Osprey's nest, and from the fact that the same situation is resorted to for many years in succession, the branches which support it are not unfrequently distorted in growth and flattened. In other cases the Osprey has several favourite eyries in one chosen locality, and appears to utilise them in turn, like the White-tailed Eagle or the Peregrine. As a rule the largest tree in the forest, the patriarch of the timber, is selected to hold the nest, which is built at varying heights from the ground, sometimes on the topmost branches, flattened by its weight, more rarely at a distance of ten or twelve feet from the ground on one of the broad-spreading limbs. But, when the Osprey's nest is on ruins, it is often at a far less elevation, and when built on rocky islands, it is not unfrequently but a few feet from the ground, built amongst the grey lichens and tufts of polypody fern. On the southern shores of the Baltic, north of Stettin, surrounding the inland lakes which form the delta of the Oder, are vast forests which form a perfect paradise for the Osprey. Lonely forests within easy access of fresh-water lakes are the favourite breeding-places of this bird. He generally selects the loftiest tree in the forest, his main object being apparently to be able to rise at once from the nest without being incommoded by the branches of trees. Thus it often happens that the nest is visible at the distance of a mile. The structure is enormously large, and from three to four feet in diameter, and occasionally as high. It is usually placed upon the summit of a pine-tree, one having a dead top being preferred. At the outside it extends so far over the branches that it is very often difficult to reach. The foundation is made of branches intermixed with decaying vegetable matter and sods; the upper surface is flat, and consists of finer twigs covered over with green and dry grass, the eggs being laid in a slight hollow in the middle, not more than a foot across, and scarcely two inches deep."

Eggs.—The eggs of the Osprey are among the most beautiful of all of the Birds of Prey, and are very finely marked as a rule. The ground-colour is white, which is sometimes entirely hidden by the red or purple blotches which congregate at the larger end of the egg. Those with large blotches of colour are the commonest and at the same time the most handsome, for occasionally the markings are much smaller, and take the form of spots, streaks, and marblings, which are distributed over the whole surface. Axis, 2·35–2·6 inches; diam., 1·7–1·9.

THE TRUE RAPTORIAL BIRDS. SUB-ORDER FALCONES.

The name *Falcones* has been adopted for the bulk of the Birds of Prey, because the Falcons may be considered the most typical of all the Hawks, but, as a matter of fact, the present Sub-order includes every Accipitrine Bird except the Ospreys and the Owls. From both of these groups of birds the *Falcones* differ in not having a reversible outer toe, and from the Owls they are further distinguished by the absence of the facial disk and the presence of a cere.

Putting aside the American Turkey Vultures and the Condors, which form a separate Sub-order, and are quite distinct from the ordinary Birds of Prey, we may divide the remaining species into two main families, *Vulturidæ* and *Falconidæ*.

THE VULTURES. FAMILY VULTURIDÆ.

The principle character by which a Vulture is known is by its bare head, which is either quite naked or only scantily clothed with down. There is generally a ruff of feathers or down round the neck, but true feathers are never developed on the crown of the head. The feet are strong, but are not formed for grasping, as in the rest of the Hawks, but rather for holding their prey firmly, while they tear it to pieces with their powerful bills. They feed almost entirely on carrion, and never capture anything in full flight. They are entirely peculiar to the Old World.

THE GRIFFON VULTURES. GENUS GYPS.

Gyps, Savigny, Descr. de l'Egypte, p. 232 (1809).

Type, *G. fulvus* (Gm.).

All the species of Griffon Vulture have down on the crown, and a ruff round the neck. They are all birds of large size, and have an immense bill, with a perpendicular oval nostril. The toes are very long, and the middle one even exceeds the tarsus in length. Their general colour is brown, sometimes rather tawny, in some species nearly white or creamy-white, while Rüppell's Vulture (*Gyps rueppelli*) is remarkable for the whitish tips to the feathers of the upper surface. The Griffon Vultures are distributed over the Mediterranean Region in Europe, the whole of Africa, the Indian Peninsula, and the Burmese provinces down to the Malayan Peninsula.

I. THE GRIFFON VULTURE. GYPS FULVUS.

Vultur fulvus, Gm. Syst. Nat. i. p. 249 (1788).

Gyps fulvus, Newt. ed. Yarr. Br. B. i. p. 1 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 6 (1874); Dresser, B. Eur. v. p. 373, pls. 319, 320 (1879); Seebohm, Hist. Br. B. i. p. 4 (1883); B. O. U. List Br. B. p. 91 (1883); Saunders, Man. Br. B. p. 301 (1889); Lilford, Col. Fig. Br. B. part xxiii. (1893).

Adult Male.—Ashy-fulvous above, with a slight shade of grey on some of the feathers, some of which are darker brown, giving the bird a mottled appearance; wing-coverts a little paler than the back, the greater series edged and tipped with creamy-white; lower back and rump darker brown; the upper tail-coverts pale ochraceous-buff; quills and tail black, slightly shaded with brown, the secondaries broadly edged with ashy, the inner ones tipped with ochraceous-buff; ruff round the neck white, and composed of downy feathers; crop-patch brown; under surface of body creamy-brown, with narrow whitish shaft-lines; cere bluish-black; bill yellowish-white horn-colour; feet lead-colour; iris reddish-orange. Total length, about 40 inches; culmen, 3·7; wing, about 29·0; tail, 12·0; tarsus, 4·4.

Adult Female.—Smaller than the male (*Newton*).

Young Birds.—More tawny than the adults; the ruff round the neck composed of lanceolate feathers, which are whitish, with tawny margins; crop-patch rufous fawn-colour, like the rest of the under surface, with a whitish mark down the centre of each feather. Total length, about 38 inches; wing, 27·0.

The bird which I separated in 1874 as the Spanish Griffon (*Gyps hispaniolensis*) is now considered by ornithologists to be the young of *G. fulvus*, in which the ruff is downy instead of being composed of lanceolate feathers. I accept this verdict at present, but it is much to be desired that the changes of plumage in these Griffon Vultures was more thoroughly studied. Unfortunately for science, the habits of the Griffons and the food they eat, or rather, perhaps, the condition in which they eat it, renders the preservation of Vultures such an unsavoury task that it is very difficult to get any naturalist to undertake the task of preserving a series of specimens. My friend the late Mr. W. Davison, who skinned many Vultures, told me that he always poured a good dose of carbolic acid into the gullet of the birds, before he dared to attempt the task of skinning them. Anyone who sees the Bengal Vultures (*Pseudogyps bengalensis*) sitting on the Towers of Silence in Bombay, row upon row, packed tightly side by side, and knows the name of the food that distends their crops, may be excused from wishing to make a Museum specimen of them, even if he saw that their state of plumage was interesting, or absolutely necessary to be described for a proper understanding of the life-history of the species.

Range in Great Britain.—A very rare and occasional visitor. Though rumours are afloat that other Griffon Vultures have been seen and recognised by competent observers, whose testimony would be received without hesitation by all ornithologists, there is but a single example which is so far authenticated as British. In the spring of 1843, a specimen, which Mr. Howard Saunders affirms to be a young bird (*i.e.* a bird of the previous year), was caught by a boy on the rocks near Cork Harbour, and was presented by Lord Shannon to the Museum of Trinity College, Dublin, where it still remains.

Range outside the British Islands.—A bird like the Griffon, which undoubtedly wanders far in search of food, and, an absentee from a district on one day, is present on the next in numbers, if a battle has taken place, and food is plentiful, is not the easiest bird of which to trace the exact geographical distribution. Furthermore, much of our information is a matter of conjecture, as few people bring back skins of the Vultures they see, that identification may be rendered certain.

The Indian Griffon is allowed to be a separate race or subspecies under the name of *Gyps fulvescens*, Hume, but its range is very doubtfully determined, and so the eastern limits of the Griffon of Europe is still a matter of conjecture.

Supposing that the Spanish Griffon is not distinct, a fact by no means yet proved with certainty, for lack of specimens, the range of *Gyps fulvus* may be said to extend over the Mediterranean countries, and probably extends far into the Soudan, as Major Denham brought one back from his adventurous journey across Africa. I often think that if the brave traveller had not brought a bulky Griffon's skin, but had collected small birds to the same extent, what an insight he might have given us to the avifauna of Central Africa, which remains an unknown quantity to the present day! The European Griffon undoubtedly frequents North-eastern Africa and the Red Sea district, as far south as Aden, and extends eastwards through Asia Minor to Persia, and probably to Turkestan, though here the reigning species may be the Indian *Gyps fulvescens.*

Habits.—The Griffon Vulture preys exclusively on dead animals, and there can be little doubt that it seeks its prey entirely by sight and not by the sense of smell, as many observers have suggested. Captain Willoughby Verner, who has climbed to many Griffons' eyries, says that the stench about the nests is dreadful, "an indescribable sickly odour." Mr. Seebohm writes: "The stench of the Griffonries is almost insupportable. The entrance to the cavern or cleft in the rock looks as if pails of whitewash had been emptied upon it; and the effluvia of ammonia and putrefaction are overpowering to all but the most enthusiastic oologist. One visit to the nest of a Vulture is sufficient to dispose for ever of the theory that these birds hunt by scent, and are endowed with highly-sensitive olfactory nerves. The only condition in which the existence of animal life seems possible in a Griffonry, is in the case of animals absolutely devoid of any sense of smell whatever."

When in flight, a Griffon Vulture is a grand bird, and will sail almost for a distance of a mile without once flapping its wings, and in the air they float round and round without a movement of the wings, probably by some inclination of the primaries, which sometimes seem to be curved upwards. In the Himalayas I have seen them thus sweep over the tops of the high mountains and glide across the valleys with a sailing flight, till one could scarcely judge the distance, without any apparent movement of their wings.

The Griffon is an early breeder, and begins to repair its nest in January, laying towards the end of February or in March.

Nest.—Composed principally of sticks, and placed on a ledge of an almost inaccessible rock, or in a hole or cave.

Eggs.—One, occasionally two ; generally white without markings, but sometimes streaked or blotched with pale reddish-brown. Some eggs are even handsomely marked with the latter colour. Axis, 3·7 ; diam., 2·8.

THE SCAVENGER VULTURES. GENUS NEOPHRON.

Neophron, Savigny, Syst. Ois. de l'Egypte, p. 238 (1808).
Type, *N. percnopterus* (L.).

The Neophrons are distinguished by their small size and very slender bills, the nostrils being placed horizontally in the latter. Four species of these Scavenger Vultures are known to science, two of them white and two brown in colour. The latter have the crop-patch feathered, and are confined to Africa, one of them, *N. pileatus*, being found in the southern part of the continent, and the other, *N. monachus*, being an inhabitant of North-eastern Africa and certain parts of Western Africa.

Of the two white Scavenger Vultures which have the crop-patch bare instead of feathered, the one which is found in Europe is the best known, and extends throughout the Mediterranean Region, being replaced in India by a closely-allied form, *N. ginginianus*.

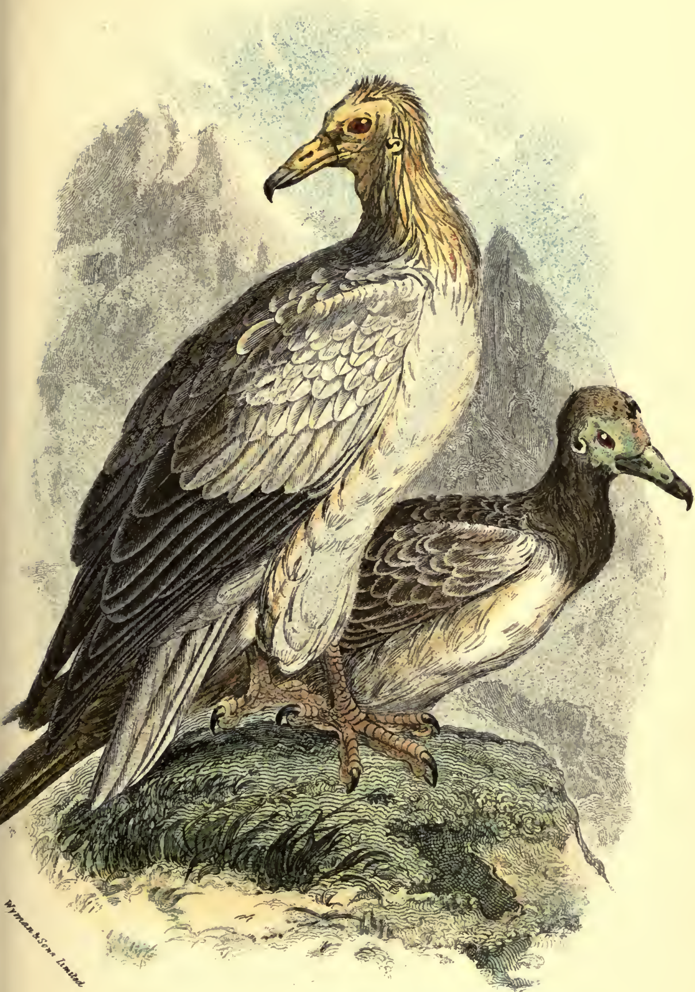
I. THE EGYPTIAN SCAVENGER VULTURE. NEOPHRON PERCNOPTERUS.

Vultur percnopterus, Linn. Syst. Nat. i. p. 123 (1766) ; Seeb. Hist. Br. B. i. p. 11 (1883).

Neophron percnopterus, Macg. Br. B. iii. p. 166 (1840) ; Newton, ed. Yarr. Brit. B. i. p. 6 (1871) ; Sharpe, Cat. B. Brit. Mus. i. p. 17 (1874) ; Dresser, B. Eur. v. p. 39, pl. 322 (1879) ; B. O. U. List Br. B. p. 92 (1883) ; Saunders, Man. Br. B. p. 303 (1889) ; Lilford, Col. Fig. Br. B. part xxiii. (1893).

(*Plate XLI.*)

PLATE XLI.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EGYPTIAN VULTURE.

Adult Male.—General colour white, with a little tinge of rust-colour on the neck-hackles; the primaries black, externally ashy-white at the base; the secondaries dark brown, externally ashy-white; the head bare and yellow, with a little scanty down on the throat, and with a few whitish feathers in front of the eye; chest bare; bill pale horny-brown; feet yellowish-white; iris red or reddish-brown. Total length, 25 inches; culmen, 2·8; wing, 19·2; tail, 10·0; tarsus, 3·5.

Adult Female.—Similar to the male in colour.

Young Birds.—Differ from the adults in being blackish-brown in colour, with fulvous tips to the feathers. As the birds grow older, the mantle and the wing-coverts become more and more of an ochre shade, till they gradually assume the white plumage of the adults; fore part of head and neck dirty grey.

Range in Great Britain.—Two specimens are all that have been obtained within our limits, and the Egyptian Vulture must be reckoned as one of our rarest and most occasional visitants. Two birds were observed in October, 1825, in Bridgewater Bay in Somersetshire, and one of them, a young bird, was shot. In September, 1868, another was killed in Essex, at Peldon.

Range outside the British Islands.—Chiefly an inhabitant of the Mediterranean countries, extending eastwards to Central Asia, and said to occur also in North-western India. It is found in Southern France and throughout the Spanish Peninsula, breeding also in the Canaries, Madeira, and the Cape Verd Islands. Thence it extends eastwards on both sides of the Mediterranean to Egypt and North-eastern Africa, to the Caucasus, Persia, and Turkestan. In winter it wanders south through Africa down to the Cape Colony. In the Indian Peninsula it is represented by a closely allied form, *Neophron ginginianus*, which has a yellow bill, and is rather smaller in all its dimensions. In confinement Colonel Irby says that it takes three years for a *Neophron* to assume the adult's white plumage, but in a wild state he believes that it is donned with great rapidity.

Habits.—The Scavenger Vulture is a filthy bird, according to human notions, but is a useful one in the hot climates where it lives. It arrives early in Europe, and the earliest dates of its northward migration near Gibraltar is the 23rd of February, though the bulk of the migration takes place in March, the laying of the eggs taking place about the 1st of May.

The food of the present species consists of all kinds of carrion, dung, and putrefying substances of all sorts. It will take its meal from a carcase after the Hyænas and Griffons have had their share, and even frequents the sea-shore to pick up rotten fish thrown up by the tide. Though repulsive in its habits, everyone admits that the *Neophron* is a fine bird on the wing. In the Himalayas I found the Indian representative of the genus inhabiting the lower valleys, where they sailed majestically backwards and forwards, scanning the ground below. At Simla they never ascended to the higher portions of the mountains, where the Griffons were to be seen topping the crest in the early morning on their far-reaching course, but hundreds of feet down below one could see the White Scavengers sailing in the valley in circles or in a direct line.

From their habits one can gather the idea of what their nest may be like. Here is the description given by that excellent observer, Colonel Irby, in his work on the "Ornithology of the Straits of Gibraltar" :—"The nest is often easily accessible from below, and, placed on a ledge of some overhung rock, generally at the top of a sierra, is composed of a few dead sticks, always lined with wool, rags, and rubbish, such as a dog's head, boars' tusks, dead kittens, foxes' skulls and fur, rotten hedge-hogs, dead toads, dead snakes, skeletons of snakes, lizards, mummified lizards, lizards' heads, carapaces of the water-tortoise, rotten fish, excrement both of man and beast, bones, bits of rope and paper. In one nest Major Verner found, among a heap of filthy rags, a number of meal-worms. Probably the *Neophron* had picked up a bag with some flour in it. Naturally, from the above-mentioned contents, their nests are most offensively odoriferous!" He further adds :—"They are probably among the foulest feeding birds that live, and are very omnivorous, devouring any animal substance, even all sorts of excrement: nothing comes amiss to them."

Nest.—A mass of sticks and rubbish, as described above. As a rule in Southern Europe, the nest is placed on the ledge of a rock, and not often on a tree, but this sometimes happens. The Indian Scavenger Vulture, however, often nests on a tree, appropriating the old nest of some other bird, just as the Egyptian Vulture in Greece and other countries of the Mediterranean will make use of the disused nest of a Laemmer-geier, or Bearded Eagle, and lays its eggs among the carapaces which that bird has collected, after having cracked them upon the bald skulls of the descendants of Æschylus, or upon the rocks which, in modern times, do duty for that convenient mode of breaking up Tortoises.

Eggs.—These are generally very handsome, being profusely spotted with red on a white ground. The amount of red marking varies considerably. They are generally two in number, and often only one egg is laid, while on very rare occasions three have been met with. Axis, 2·5–2·75 inches; diam., 1·9–2·05.

THE TRUE RAPTORIAL, OR ACCIPITRINE, BIRDS. FAMILY FALCONIDÆ.

Although the name of *Falconidæ* is generally in use for the Birds of Prey as a whole, the Family includes a number of Accipitrine forms which are far removed from the Falcons, which the name of the Family would imply as being the most typical. Between the True Falcons and the Vultures are found a number of intermediate types, which are divisible into Sub-families. Thus we have the Caracaras of South America (*Polyborinæ*), Ground Birds of Prey, with their toes connected by a membrane. To these the Secretary-Bird of Africa is akin, but presents so many points of structural difference that t may be considered the type of a separate Sub-family (*Serpentariinæ*), now peculiar to Africa, but found in ancient times n France. Of the general mass of Accipitrine Birds, which have only a slight membrane connecting the outer and middle toes at the base, we have four Sub-families: the Long-legged Hawks (*Accipitrinæ*), such as the Harriers, Goshawks, and Sparrow-Hawks; and the shorter-legged series, comprising the Buzzards (*Buteoninæ*), the Eagles (*Aquilinæ*), and the Falcons (*Falconinæ*).

With the web-footed Birds of Prey we have nothing to do, as they are American and African, but the Long-legged Hawks concern us, as representatives of the principal genera are found in Great Britain, and constitute the first Sub-family of our true Raptores, or Birds of Prey.

THE LONG-LEGGED HAWKS. SUB-FAMILY ACCIPITRINÆ.

In these birds the membrane between the toes exists only at the base of the outer and middle toes, which are joined together by a web. The tibia is very long, as well as the tarsus, and these two portions of the leg are about equal in length, whereas in Buzzards, Eagles, and Falcons the tibia is conspicuously longer than the tarsus. The Long-legged Hawks comprise the Harriers, Goshawks, and Sparrow-Hawks of Europe, as well as many tropical forms, such as the Gymnogenes of Africa (*Polyboroides*), curious reptile-eating Hawks, apparently distant relations of the Secretary-Bird, but not so powerful as the latter bird, which is a ground-loving and walking species, whereas the Gymnogene is forest-loving and arboreal in its ways. It has, moreover, the curious faculty, not yet discovered in the Secretary, which is a weak-kneed individual from all accounts, of being able to turn its leg backwards or forwards at will by an apparent dislocation of the tibio-tarsal joint, an advantage in the catching of reptiles which is said to be shared by its relative, the American genus *Geranospizias*. To this section of the Birds of Prey belong also the Chanting-Goshawks (*Melierax*) of Africa.

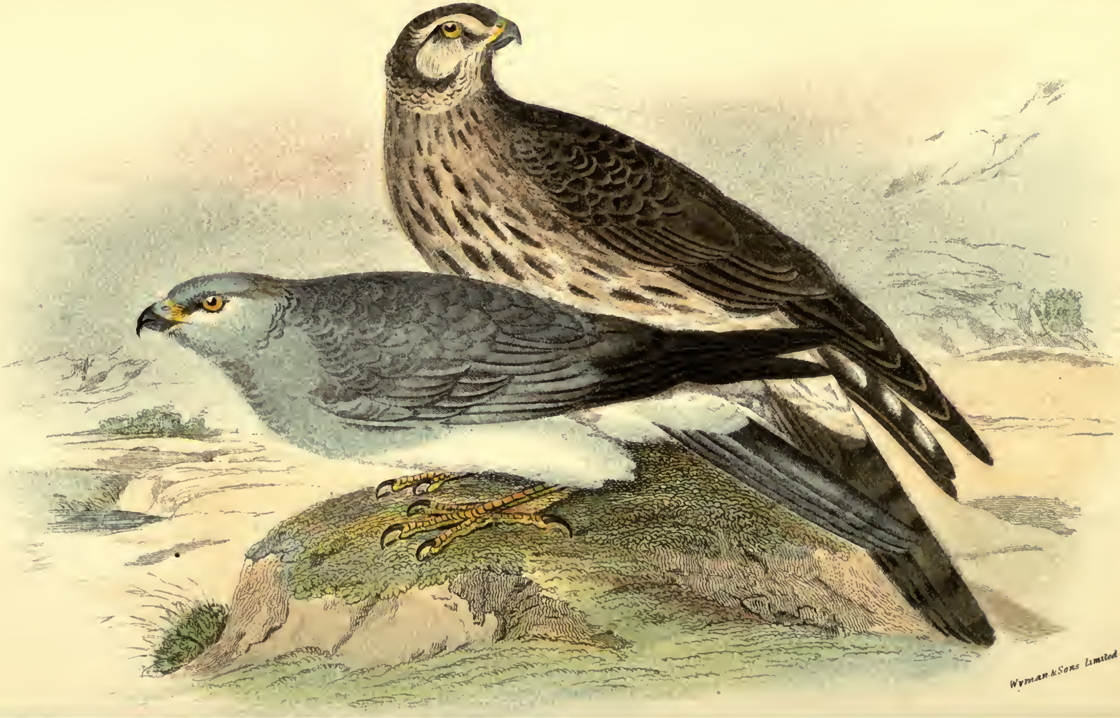
THE HARRIERS. GENUS CIRCUS.

Circus, Lacép. Mém. de l'Inst. Paris, iii. p. 506 (1806).

Type, *C. cyaneus* (L.).

The Harriers are as nearly as possible cosmopolitan birds. They do not extend very far north, and affecting, as they do, localities suited to their mode of life, they are absent from some of the forest-clad regions of both Hemispheres. There is not, however, a single continent that is without its Harrier, and these birds are found in North and South America, Africa

PLATE XLII.



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Europe and the whole of Asia, Australia and New Zealand, and even the islands of the Pacific Ocean. Although they are really Long-legged Hawks, of the same type as the Sparrow-Hawks, the ruff which they have round their face has suggested their alliance with the Owls, and it is usual in works on Natural History to find the Harriers placed near the Owls on account of this peculiarity, which, however, is shared by the Ruffed Gos-Hawks (*Micrastur*), and no one has as yet suggested that the latter are allied to Owls. In my opinion, this single character shows no absolute affinity whatever between the Harriers or the Ruffed Gos-Hawks and the Owls, which are altogether distinct and separate. That the genus *Micrastur* and the genus *Circus* have certain relationship is further proved by the fact that both genera have the hinder aspect of the tarsus covered with reticulate scales.

Three species of Harriers are found in Great Britain. They are all now more or less rare, but were more common before the draining of the marsh-lands deprived them of so much of their congenial habitat.

I. THE HEN-HARRIER. CIRCUS CYANEUS.

Falco cyaneus, Linn. Syst. Nat. i. p. 126 (1766).

Circus cyaneus, Macgill. Brit. B. iii. p. 366 (1860); Newton, ed. Yarr. Brit. B. i. p. 132 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 52 (1874); Dresser, B. Eur. v. p. 431, pls. 75, 76 (1879); B. O. U. List Br. B. p. 93 (1883); Seebohm, Brit. B. i. p. 128 (1883); Saunders, Man. Br. B. p. 307 (1889); Lilford, Col. Fig. Brit. B. part xxi. (1892).

(*Plate XLII.*)

Adult Male.—Clear blue-grey or bluish ash-colour, lighter on the greater wing-coverts, which are silvery-grey; under-parts white, the throat and upper breast blue-grey; base of forehead and lores whitish, the ruff also mottled with white; primary quills black both above and below, with a white base to the inner web; the secondaries silvery-grey, with black shafts, and an indistinct sub-terminal band of black; upper tail-coverts white; tail-feathers ashy-grey, tipped with white, the four central feathers uniform, the rest more or less white on the inner webs, with remains of ashy bars; cere yellow: bill bluish-black; feet yellow, claws black; iris yellow. Total length, 22 inches; culmen, 1·15; wing, 13·5; tail, 8·5; tarsus, 0·9.

Adult Female.—Different from the male, and rather larger. Brown, the feathers of the crown slightly washed with rufous; nape and hind-neck pale tawny-buff, streaked with dark brown; the scapulars and wing-coverts with large oval spots of pale tawny-buff; quills brown, with whitish tips, the secondaries externally washed with ashy-grey, barred with blackish-brown, these bars very distinct on the lower surface of the wing; upper tail-coverts white; tail greyish-brown, tipped with whitish, and crossed with five bands of darker brown, of which the sub-terminal one is much broader; the light bands on the outer tail-feathers pale creamy-buff, shaded with ashy; feathers of the forehead and above and below the eye whitish; ear-coverts and cheeks rufous, streaked with dark brown; facial ruff buffy-white, streaked with brown; sides of neck and under surface of body pale tawny-buff; the lower breast and abdomen whitish, all broadly streaked with brown, rather more narrowly on the thighs and abdomen, where the streaks are somewhat tinged with rufous; flanks and axillaries dark brown, marked on both webs with rounded spots of creamy-buff; cere greenish-yellow; bill blackish; feet yellow; iris reddish-brown. Total length, 23 inches; wing, 15–15·6; tail, 10·3–11·0; tarsus, 3·15.

Young Birds.—The young male is brown like the old female, but is always to be recognised by its smaller size, as the wing never exceeds 14 inches in length. The plumage is always more rufous than in the old female, especially on the lower parts and about the head and neck; facial ruff clear fulvous, streaked with dark brown; feathers above, around, and below the eye pure white, forming a very conspicuous facial patch; under surface of body tawny-rufous, with dark brown streaks, narrower on the abdomen; upper tail-coverts white, with streaks of rufous-brown; tail tawny-rufous, with a buff tip, and crossed by four blackish bands.

A young female is like the old female, but has the bars on the tail rufous.

Characters.—*An adult male* Hen-Harrier can always be told by its bluish-grey plumage, white upper tail-coverts, uniform white thighs, and the bluish-ashy colour of the throat and chest. *An adult female* can always be recognised by having a "scallop," or indentation, on the outer web of the *fifth* primary quill. This character is also sufficient to tell the young birds of the Hen-Harrier from those of Montagu's Harrier.

Range in Great Britain.—The present species was formerly much more generally distributed as a breeding-species than it is now. Its numbers have been decreased by its being shot down by gamekeepers, and the bringing into cultivation of much of the waste-land in which the species delights has also been one of the chief causes of its diminution in numbers. At one time the Hen-Harrier used to breed in many counties of England and Wales, but in most of these it has ceased to do so for the reasons above-mentioned. In the Highland counties of Scotland the species still nests, as well as in the Orkneys and Shetlands, and also in the Hebrides. In Ireland Mr. Ussher states that it breeds sparingly in Kerry and Galway, and possibly still in Antrim, Queen's County, Tipperary, and Waterford, but has become very scarce. It seems to have been exterminated from Donegal and Londonderry.

Range outside the British Islands.—Throughout the greater part of Europe the Hen-Harrier is chiefly known between spring and autumn, and it is probably only in the British Islands that any remain during the winter. It breeds in Northern Europe, and has been noticed by Dr. Collett from East Finmark, and Wolley found it breeding in Lapland beyond 68° N. lat., according to Professor Newton. Mr. Seebohm states that he has seen the Hen-Harrier on the tundras of Northern Russia and Siberia, more than a hundred miles beyond the Arctic Circle, and its range extends across Siberia to Corea and the Japanese Islands. In suitable localities the species breeds in Central Europe from Denmark and Germany to the Alps and Carpathians, as well as in Central France. In winter it migrates south and visits North-eastern Africa, India, and China, in all of which countries it appears in some numbers in the cold season.

Habits.—The Hen-Harrier is an inhabitant of the fens and moors, where it may be seen quartering the ground in search of its food, which consists of small mammals and reptiles, these forming its chief subsistence, though it will also catch small birds, and devour both eggs and nestlings of Game-Birds. Professor Newton describes the flight of the Hen-Harrier as performed apparently without much labour, easy and buoyant, but not rapid, and, except in the breeding-season, generally within a few feet of the surface of the ground, which they examine with great care, making close and diligent search for any object of food They have been observed to hunt the same ground regularly, and a male bird has been seen to examine a large wheat-stubble thoroughly, crossing it in various directions, always about the same hour in the afternoon, and for many days in succession.

Taczanowski says that the present species feeds on rodents, frogs, lizards, large insects, and the eggs and chicks of small birds, but it also often catches the old birds on their nests or when they are hiding in the grass. Sometimes it will pursue the small birds as they fly up from the latter, but if the Harrier does not manage to catch them at once, it soon relinquishes the chase. It will sometimes capture Sandpipers, Quails, Plovers, and other birds. The eggs which it devours are mostly those of small birds which breed on the ground, such as the small Plovers, but Ducks' nests are but seldom plundered by it, as it does not often frequent the places where those birds breed.

Nest.—The nest is placed on the ground, and according to Taczanowski, who has given a very interesting account of the habits of this Harrier, it is often situated in the brushwood in the middle of the prairies or marshes, and in many localities in corn-fields. The nest is generally in a dry situation, never in very moist places, more often on the flat ground than on any small elevation. The nest contains few branches, and never rushes; as a rule, on a bed composed of some sort of rameaux, the bird deposits a layer of fine and long dry grass, so as to form a compact mass, flattened down, about two feet wide and four or five inches high, slightly hollowed towards the centre of the nest. The eggs are generally four in number, more rarely three. The female sits very close, and will not move even when a man passes quite near to the nest, but the male is extremely vigilant, and as soon as he perceives an enemy, he comes towards him with a cry, and suddenly uttering a note like "ker-ker-ker," produced at short intervals, he continues to charge and reveals at once the situation of the nest. The female will not budge from the nest, and is not more wary even after she has been fired at. Both parents are very assiduous in their care of the young ones.

Eggs.—From four to six in number, bluish-white in colour, with occasionally yellowish-brown or rusty markings. Axis, 1·7–2·0 inches; diam., 1·25–1·5. The Hen-Harrier is rather a late breeder, and lays its eggs towards the end of May and throughout the month of June.

II. MONTAGU'S HARRIER. CIRCUS PYGARGUS.

Falco pygargus, Linn. Syst. Nat. i. p. 148 (1766).
Circus cineraceus, Mont.; Macg. Brit. B. iii. p. 378 (1840); Newt. ed. Yarr. Brit. B. i. p. 138 (1871); Seeb. Brit. B. i. p. 131 (1883).
Circus pygargus, Sharpe, Cat. B. Brit. Mus. i. p. 64 (1874); Dresser, B. Eur. v. p. 423, pl. 328 (1878); B. O. U. List Br. B. p. 93 (1883); Saunders, Man. Br. B. p. 309 (1889); Lilford, Col. Fig. Br. B. part xxvii. (1893).

Adult Male.—General colour above bluish-grey, the wing-coverts slightly darker than the back, and having a terminal spot of dark ash-colour; primary-coverts and secondary-quills silvery-grey, narrowly tipped with white, and crossed by two bands of black, very plainly seen on the under surface of these quills; primary-quills black, the inner ones shaded with grey towards the tips and on the inner web; upper tail-coverts white, ashy-grey at the tips, with a sub-terminal shade of deep ashy colour, and sometimes with two ashy-grey bands; tail-feathers cindery-grey, the two central ones uniform, the remainder crossed with five broad bars of ashy-black, more rufous on the outer feathers, which have the interspaces white; lores whitish; the facial ruff cindery-grey like the head; throat and breast pale bluish-ashy; abdomen, flanks, thighs, and under wing- and tail-coverts white, with distinct longitudinal streaks of rufous fawn-colour; axillaries with large diamond-shaped cross-markings of rufous; cere greenish-yellow; bill blackish; feet yellow; iris yellow. Total length, 18 inches; culmen, 1·1; wing, 13·5–15·0; tail, 9·8; tarsus, 2·3.

Adult Female.—Different from the male. Nearly uniform brown above, with slight remains of rufous margins to the feathers; head and hind-neck streaked with pale rufous, as well as the sides of the neck and the facial ruff; ear-coverts nearly uniform brown, the feathers under the eye whitish; quills dark brown, the primary-coverts and primaries shaded with grey externally, and barred with darker brown, more distinctly underneath, where the quills are buffy white on the inner web, the inner secondaries being brown like the back; upper tail-coverts white; tail brown, tipped with paler brown and crossed with five bands of darker brown, the interspaces paler and more rufescent on the outer rectrices, inclining to whitish on the inner web; under surface of body buffy white, with rufous centres to the feathers, giving a distinctly striped appearance; cere dull yellow; bill black; feet yellow; iris hazel. Total length, 19 inches; wing, 15·3; tail, 8·7; tarsus, 1·4.

Young Birds.—Dark brown like the old female, with pale tawny margins to the feathers of the upper surface, the white upper tail-coverts with broad tawny-buff edges and narrow shaft-lines of dark brown; head and neck rich tawny colour, the feathers centred with dark brown and imparting a mottled appearance; lores, eyebrow, and fore-part of ear-coverts white, the latter washed with rufous; tail-feathers deep tawny colour, inclining to buff at the tip, and crossed with four or five blackish bands, the central feathers uniform ashy-brown with five distinct black bands; throat whitish; facial ruff and entire under surface of body clear tawny-buff, with a few streaks of reddish-brown on the upper breast, flanks, and upper wing-coverts.

Characters.—Montagu's Harrier is a smaller bird than the Hen-Harrier, and the adult male is easily distinguished from the male of the latter by the *white thighs, which have also rufous streaks, or spots*. The throat and chest are ashy-grey. The *adult female* is distinguished from that of the Hen-Harrier by the simple test of the presence or absence of a notch in the outer web of the fifth primary. If there is no notch, then the bird is Montagu's Harrier and not the Hen-Harrier. This same test will distinguish the young birds of the two species, and I may say that these characters, suggested as specific by Mr. Howard Saunders more than twenty years ago, have over and over again been proved by me to hold good.

Montagu's Harrier, like several other species of the genus *Circus*, is subject to melanism, and old birds are sometimes found nearly black, while the young birds have also a melanistic phase, this being often the case in English-killed specimens.

Range in Great Britain.—A spring and summer visitor, chiefly to the southern and eastern counties, in some of which it still breeds, recent instances having been recorded in the Isle of Wight, Dorsetshire, and Norfolk. It has also been known to nest in Wales, and even as far north as the Solway district in Western Scotland, but everywhere in the north of England it must be considered a rare and occasional visitor only. In Ireland it has occurred on four occasions, in Co. Wexford and Co. Wicklow.

Range outside the British Islands.—The present species does not extend its range so far north as the Hen-Harrier, and the neighbourhood of St. Petersburg and the Gulf of Finland appear to constitute the northern limits of the species in Europe. In Central Europe and in Central and Southern Russia it breeds generally, and in Spain it is a resident in suitable localities, receiving a large accession of numbers in winter. At this season of the year it not only migrates to Northern Africa and the Canaries, but passes down the Nile Valley, even to the Cape Colony. Eastwards the species is found as far as Turkestan and South-western Siberia, but has never been recorded from Eastern Siberia. The eastern winter range extends to the Indian Peninsula and the Burmese Provinces.

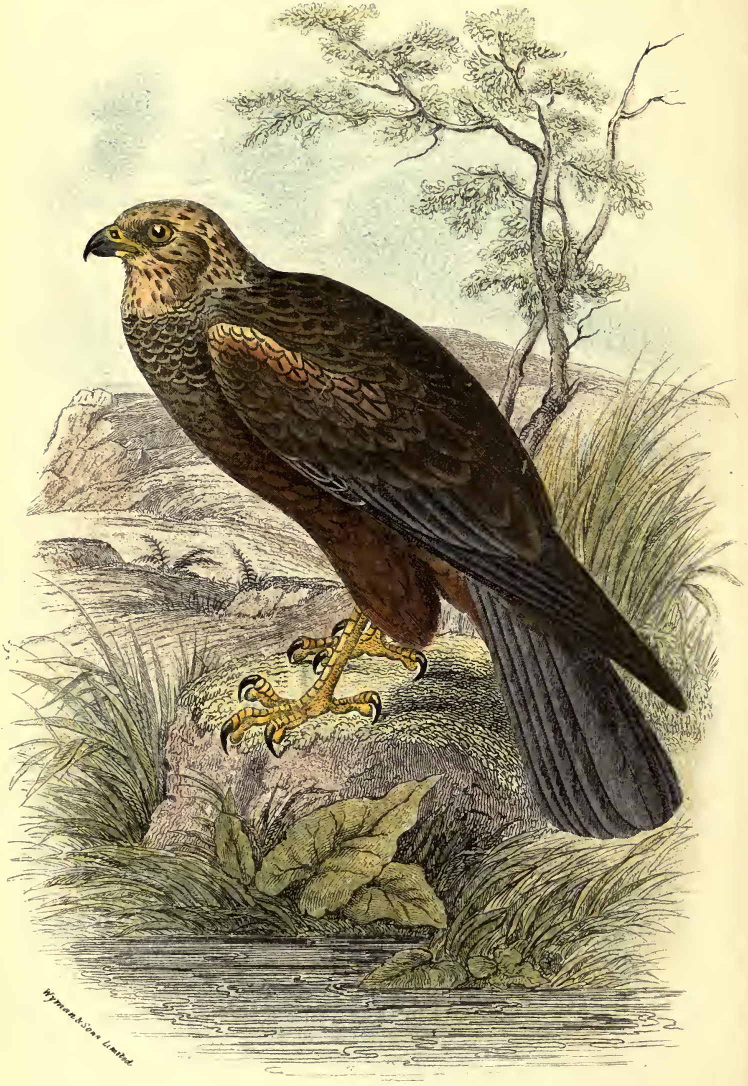
Habits.—This species is said by Colonel Irby to possess a lighter and more Owl-like flight than the other European Harriers, and the wings are longer in proportion than in the other species of the genus *Circus*. It arrives in Central Europe in March and April, and leaves in October.

Not only during its winter migrations is the present species gregarious, but it appears frequently to nest in company, and Colonel Irby found a colony of fifteen or twenty pairs breeding in a marsh near Lixus in Marocco at the end of April, and he could see with his telescope the hen-birds "sitting dotted about the marsh." Montagu's Harrier hunts for its food in the usual manner of these birds, and is also, like all Harriers, very destructive to the eggs of other birds, of which it eats a great number. Mr. Howard Saunders relates that he took two unbroken eggs of the Crested Lark from the crop of a male of one of these Harriers, with the crushed remains of others, but with the exception of this evil propensity, the bird devours large numbers of small rodents, frogs, snakes, and lizards, as well as locusts, grasshoppers, and other insects. Small birds also fall victims to its rapacity, but the Harrier does not pursue them in full flight, but pounces on them on the nest or on the ground.

Mr. Seebohm writes :—" Its long and pointed wings give an especial gracefulness to its flight. Now it darts rapidly with half-closed wings, now it makes a sudden turn with one wing elevated, and now it sails over the surface of the ground with motionless outspread wings; but, with all its apparent power of flight, it seldom, if ever, pursues small birds if they attempt to escape." Montagu's Harrier has also the habit of sailing in wide circles, like many other Birds of Prey. Mr. Howard Saunders describes the female, which he put off the nest in the Isle of Wight, as "flying away in repeated and ever widening circles. The same feature was remarked on the return to the nest: the wide circles gradually narrowed, and the wings were suddenly closed as the bird swept over the nest and dropped upon it." The last-named observer also states that the young birds sometimes circle and hover with outspread wings and tail, like Kestrels, though less steadily, and the white colour of the tail-coverts distinguishes the species at a glance.

Nest.—A very slight one, generally a mere hollow in the ground, lined with dry grass. In the fens, however, Mr. Saunders says that it is substantially built of sedge. A nest found by Mr. Seebohm in Germany in a field of rye is thus described by him :—" There was no hole whatever in the ground: the rye had only been trampled down, and a slight but somewhat neat nest made of corn-stalks, and lined with a little dry straw. The nest was rather more than nine inches

PLATE XLIII.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MARSH - HARRIER.

in diameter, and about two inches and a half deep in the middle."

Eggs.—From four to six in number, laid at intervals about the end of May. They are bluish-white, but, on rare occasions, have some pale reddish spots. Axis, 1·6–1·8; diam., 1·3–1·45.

III. THE MARSH-HARRIER. CIRCUS ÆRUGINOSUS.

Falco æruginosus, Linn. Syst. Nat. i. p. 130 (1766).
Circus æruginosus, Macg. Brit. B. iii. p. 382 (1840); Newt. ed. Yarr. Brit. B. i. p. 127 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 69 (1874); Dresser, B. Eur. v. p. 415, pls. 326, 327 (1878); B. O. U. List Br. B. p. 92 (1883); Saunders, Man. Br. B. p. 305 (1889); Lilford, Col. Fig. Br. B. part xiv. (1890).

(*Plate XLIII.*)

Adult Male.—General colour above dark brown, the feathers slightly margined with rufous; lesser wing-coverts buffy-white, with dark brown centres; outer greater-coverts, primary-coverts, and secondaries bluish-ashy, slightly tipped with white, the innermost secondaries brown, washed with more or less ashy-grey; primary-quills blackish-brown, paler at the tips, creamy-white at the base of the inner web, increasing in extent towards the secondaries, which are entirely light ashy below; upper tail-coverts white, slightly washed with grey, and tinged with rufous; tail uniform bluish ash-colour, paler and somewhat fulvescent underneath; entire head and neck creamy-buff, streaked with dark brown, the mantle being also slightly streaked; facial ruff indistinct, of the same colour as the rest of the head and neck; sides of face and throat white, narrowly streaked with dark brown, the hinder margin of the ear-coverts uniform brown; under surface of body creamy-buff, the breast longitudinally streaked with brown; abdomen and thighs more rufous, with fulvous edges to the feathers, so that they appear to be streaked with buff; under wing-coverts and axillaries uniform buffy-white, the latter having brown shaft-lines; cere greenish-yellow; bill blackish; feet yellow, the claws black; iris bright yellow. Total length, 22·5 inches; culmen, 1·55; wing, 16·0; tail, 10·0; tarsus, 3·4.

Adult Female.—In 1874, when I wrote the first volume of the "Catalogue of Birds," I was under the impression that fully adult females of the Marsh-Harrier resembled the male in plumage, nor am I yet convinced that both in this species and Montagu's Harrier, the full plumage of the female birds is not a counterpart of that of the males. I am bound to confess, however, that recent observers have not confirmed my opinion. Mr. Howard Saunders and Colonel Irby, both of whom have seen numbers of this Harrier in life, describe the female as brown above, chocolate-brown below, with a creamy-white margin to the carpal bend of the wings, and the head buff or creamy-white, streaked with blackish-brown. The tail is entirely brown.

Young Birds.—At first the plumage of the young bird is entirely chocolate-brown, including the head. The latter gradually becomes creamy-white like that of the old female, which the bird then closely resembles. The iris is blackish.

Characters.—Apart from its much larger size, the Marsh-Harrier is further distinguished from the other two British species by its rufous thighs, which sometimes have whitish spots or margins to the feathers. The tail in the adult male and female is uniform *grey*, and this last character will distinguish the melanistic birds also, though these have darker coloured thighs, in fact almost blackish in tint. *Young birds*, apart from their large size, may unfailingly be distinguished by having the outer web of the fifth primary notched, the chest perfectly uniform, *with no streaks*, the chin and centre of the breast creamy-buff, and the inner webs of the primaries *uniform.*

Range in Great Britain.—The Marsh-Harrier may now be considered only an occasional visitor to the British Islands, though it was formerly a regular breeder in the fen districts of England, and its nest has been recorded from many counties. Occasional captures in Scotland are recorded, but the evidence as to its nesting is not satisfactory. In Ireland, however, it still nests, and Mr. Ussher says that it "breeds sparingly in Queen's County and Galway, and, probably, also in King's County and Westmeath, but it seems to have been exterminated in Donegal, Londonderry, Tyrone, Down, Monaghan, Fermanagh, Kilkenny, Tipperary, Cork, and Mayo, and has now become very rare."

Range outside the British Islands.—The Marsh-Harrier is found generally throughout Europe in suitable localities, but does not extend very far north, though it breeds in Southern Sweden, and as far eastward as the Valley of the Ob, and even extends to Turkestan. It has never been recorded from Central or Eastern Siberia, being replaced in the latter country by *Circus spilonotus*, a very distinct species, easily recognised in its adult plumage, but scarcely distinguishable in its young stages from *C. æruginosus*. The supposed occurrence of our Marsh-Harrier in Japan is doubtless a mistake, and the species which has been found there must be *C. spilonotus*. The winter home of the Marsh-Harrier is in the Indian Peninsula, where it is also believed by Mr. Hume to breed, when the flooded condition of the country renders suitable spots available, and it is also said to wander as far as the Transvaal in South Africa, though here it meets with an allied species, *C. maurus*, the young of which is so very similar to that of *C. æruginosus*, that great caution is necessary in the determination of specimens from the countries inhabited by other species of Marsh-Harriers. In most of the Mediterranean countries the species breeds, receiving a great influx of individuals in the winter, when the birds bred in the north flock southward on migration.

Habits.—Like the other Harriers, the present species feeds on small mammals, snakes, and other small reptiles, and also devours a large number of eggs and young birds. It will also take sitting birds by surprise, but does not seem capable of capturing them in full flight, though it will seize a wounded bird, and follow the sportsman in the hope of picking up some quarry. Colonel Irby writes of the species in Spain:—"The Marsh-Harriers are a perfect pest to the sportsman, as, slowly hunting along in front, they put up every Snipe and Duck that lie in their course, making them unsettled and wild. Cowardly and ignoble, they are the terror of all the poultry which are in their districts, continually carrying off chickens, and, like other Harriers, they are terribly destructive to the eggs and young of all birds. On account of these propensities, I never let off a Marsh-Harrier, unless it spoiled sport to fire at one. Sometimes when at Casas Viejas, and the Snipe were scarce, to pass away the time, we used to lie up in the line of the Harrier's flight to their roosting-places; for they always take the same course, and come, evening after evening, within five minutes of the same time. Upon one occasion, a friend and myself killed eleven, and during that visit accounted for over twenty. We also, on every possible opportunity, destroyed the nest and shot the old ones; but it was the labour of Sisyphus, for others immediately appeared. However, there was a visible diminution of their numbers about Casas Viejas. We never found rats in their nests or crops, and believe that they have not the courage to kill them: small snakes, frogs, wounded birds, eggs, and nestlings form the main part of their prey."

Nest.—The Marsh-Harrier is, in many places, gregarious during the breeding-season and many nests are found in the same vicinity; at least this is the case in Southern Spain and Marocco. The nest is made of dead sedge and reeds with a few small branches, these being added to from time to time. It is occasionally found in a tree, but is generally placed in a reed-bed, sometimes on the ground and among low brambles, always near water, but sometimes far from any marshes. A disused nest of a Coot or Water-Hen is often adopted.

Eggs.—From three to six in number; pale bluish white, very rarely with any pale brown markings. When fresh blown, and held up to the light they show a bluish tinge. Axis, 1·8–2·1; diam., 1·55.

THE GOS-HAWKS. GENUS ASTUR.

Astur, Lacép. Mém. de l'Inst. Paris, iii. p. 505 (1801).

Type, *A. palumbarius* (L.).

Although belonging to the long-legged Hawks, the Gos-Hawks are much more stoutly built than the Harriers, and have no facial ruff like the last-named birds. The hinder aspect of the tarsus, also, is transversely scaled, and not articulate or covered with a network of small scales as in the Harriers. They comprise birds of all sizes, just like the Sparrow-Hawks, many of the latter exceeding the smaller Gos-Hawks in size. There is, however, one character by which these two genera of birds can be told apart. The Gos-Hawks, as we have already said, are stouter and heavier birds than the Sparrow-Hawks, and these features are especially evidenced by their large bills and feet. Thus a Gos-Hawk's bill is much longer in proportion to the size of its head, and the middle toe is shorter, whereas in the Sparrow-Hawks the middle toe is very long, and the bill is comparatively small. Taking, therefore, the length of the ridge of the bill from the cere to the tip, we find that its dimensions go more than twice into the length of the middle toe in a Sparrow-Hawk, but little more than one and a half times in a Gos-Hawk. Otherwise the two genera are very closely assimilated, and all the members are remarkable for their short wings, in direct contrast to the long wings of the True Falcons.

The Gos-Hawks are nearly cosmopolitan in their range, being found in nearly every part of America from north to south, and all over the Old World, even to the Oceanic Islands.

I. THE COMMON GOS-HAWK. ASTUR PALUMBARIUS.

Falco palumbarius, Linn. Syst. Nat. i. p. 130 (1760).
Accipiter palumbarius, Macgill. Brit. B. iii. p. 340 (1840); Seeb. Brit. B. i. p. 142 (1883).
Astur palumbarius, Newt. ed. Yarr. Br. B. i. p. 83 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 95 (1874); Dresser, B. Eur. v. p. 587, pl. 354 (1875); B. O. U. List Br. B. p. 97 (1883); Saunders, Man. Br. B. p. 321 (1889); Lilford, Col. Fig. Br. B. part xix. (1891).

Adult Male.—General colour above ashy-brown; quills brown, barred with darker brown, the under surface of the wing ashy-grey, inclining to white near the base of the quills, with dark brown cross-bars, which become obsolete on the inner quills; tail ashy-brown, tipped with white, and crossed with four broad bands of dark brown; upper tail-coverts ashy-brown, with white tips; crown of head, ear-coverts, and sides of neck blackish; the hind-neck slightly mottled with white; lores, cheeks, and a line above the ear-coverts white, streaked with blackish; under surface of body white, with black shaft-stripes on the feathers of the throat and breast; the entire under surface thickly crossed with bars of ashy-brown, less distinct on the thighs; under tail-coverts white; cere yellow; bill bluish horn-colour; iris orange. Total length, 19·5 inches; culmen, 1·5; wing, 12·2; tail, 9·0; tarsus, 3·0.

Adult Female.—Similar to the male, but a little larger in size, and rather darker grey. Total length, 23 inches; wing, 14·0; tarsus, 3·4.

Young Birds.—Much browner than the adults, mottled with white, the bases of the scapulars and wing-coverts being white, and all the feathers margined with ochraceous-buff; head and neck rufous-ochre, the nape inclining to whitish; the crown broadly streaked with dark brown, the hind-neck largely marked with spade-shaped spots of the same colour; forehead, eyebrows, and sides of face whitish, narrowly streaked with dark brown; under surface of body ochraceous-buff, inclining to white on the throat and under tail-coverts, the entire under surface streaked with dark brown, narrowly on the throat, thighs, and under tail-coverts, more broadly on the chest and breast, the flanks marked with large spade-shaped spots; tail dark brown, tipped with white, and crossed with five distinct bands of darker brown, the lighter interspaces inclining to white on either margin of the feathers; feet yellowish-brown, the claws black; cere and bill as in adults; iris yellow.

Sometimes the young birds are rusty-red on the under surface.

Range in Great Britain.—Many years ago the Gos-Hawk is said to have bred in the British Islands, but has long since ceased to do so. Speaking of the bird in Scotland, and the evidence of its breeding there, Professor Newton says:—"It is not unreasonable to suppose that, in the days when large forests of Scotch firs flourished naturally in that kingdom, it inhabited the districts so occupied; still there can be no doubt that considerable confusion has arisen from the fact that in several places its common name has been, and yet is, applied to the Peregrine Falcon, and hence some caution must be used in accepting all the testimony as to its former abundance in this country." Most of the records of the Gos-Hawk in the British Islands refer to young birds in autumn and winter, at which seasons the species is a tolerably regular migrant. Three notices of the occurrence of the bird in Ireland have been published.

Range outside the British Islands.—The Gos-Hawk is a resident in most parts of Europe up to 60° N. lat., and extends in the north to Tromsö and Archangel, throughout Russia and Siberia to the borders of the Japanese Sea, breeding throughout this wide range wherever suitable forests present themselves. It is resident in all the Japanese Islands. It also breeds in the Himalayas, and descends in winter to the lower valleys. In the eastern portion of its range it seems to be more strictly migratory than it is in Europe, where the migrants are principally young birds. North-eastern Africa, Palestine, and Egypt seem to be the winter-quarters of most of these migrating Gos-Hawks from Northern Europe.

Habits.—The name Gos-Hawk is said to be a corruption of Goose-Hawk, though it is doubtful if the bird, powerful though it be, ever attempts to capture a bird as large as a Goose. The list of animals on which it preys is, however, a sufficiently large one: hares, rabbits, small rodents, squirrels, pheasants, partridges, grouse, ducks, and smaller birds. It is even said, in the Himalayas, to capture the great Moonal Pheasants. Although it is a very fierce and powerful species, it is capable of being trained by Falconers into a very useful bird for the chase, and is said, by those who know it well, to develop great intelligence, as well as docility. A rabbit has little chance with a Gos-Hawk, for, even when given a good start, the easy speed with which the great bird sails down upon it speedily puts an end to the chase, and it is as nimble as the rabbit in doubling and twisting in its tracks. Mr. Thompson contributes to Mr. Hume's "Rough Notes on Indian Raptores" an exceedingly interesting account of the way in which the Gos-Hawk is flown in the Himalayas. He writes:—"Despite all that has been said about these short-winged Hawks, this bird is capable of attaining a high degree of efficiency as a bold and rapid flier, a fagless worker, and affording decidedly the best sport that can be had in a forest country. I have taken a Quail in the middle of April with my Gos-Hawks flying straight off the fist at the quarry. They have also flown at Partridge and Quail, 800 to 1,000 yards from where they were slipped. When first put to the quarry, they fly with outspread wings, with a listless, slow motion like that of a Great Owl—admirably described in Sir John Sebright's little pamphlet on Hawking,—but by everyday practice and constant flying at the Black Partridges, high feeding, and carefully training them to become familiar with men, dogs, and all other objects likely to frighten them, they become, in two or three months, perfect at the work. One bird I had used to be unleashed at my tent-door, and would fly to the nearest tree, and as the party set out through forest and glade, would fly from tree to tree, and thus keep on, quite up to the beaters and the dogs, never lagging behind till a bird was flushed, but always sufficiently forward to receive the quarry as it rose. . . . I have taken a dozen jungle-fowl in a couple of hours with my Gos-Hawks, using dogs to flush the birds. They have also killed Peacocks in a single flight, and Hares, without having been hooded. I have also taken Teal and Ducks in wooded swamps, by appearing at the water at a point whence a distant view could be had of the water-fowl. The Hawk, on being shown the Ducks, would fly at once to the tree nearest to them, and there wait in ambush. The beaters were then sent to flush the fowl, one of which the Hawk caught in the air as the flock rose, almost perpendicularly, out of the water."

Nest.—The Gos-Hawk breeds early: at the end of April or early in May. The nest is a large structure of sticks, and is often occupied for years in succession, and being added to during each period of tenancy, often attains to great dimensions. It is placed in a beech- or fir-tree, often at a great height from the ground, occasionally in an oak, and the interior of the nest is lined with moss, roots, and lichens, according to Mr. Seebohm, but not with green leaves.

Eggs.—From three to five, four being the usual number. They are pale bluish-green, almost white, and on rare occasions spots have been found on them. According to Colonel Irby, they are sometimes so stained with dirt as to appear quite yellow, like the eggs of a Grebe which had been sat on for some time. Axis, 2·2–2·45; diam., 1·7.

II. THE AMERICAN GOS-HAWK. ASTUR ATRICAPILLUS.

Falco atricapillus, Wilson, Amer. Orn. vi. pl. 52, fig. 3 (1812).

Astur atricapillus, Newton, ed. Yarr. Br. B. i. p. 87, note (1871); Sharpe, Cat. B. Brit. Mus. i. p. 97 (1874); Seebohm, Brit. B. i. p. 145 (1883); B. O. U. List Brit. B. p. 98 (1883); Saunders, Man. Brit. B. p. 322, note (1889).

Adult Male.—Similar to *A. palumbarius*, and of about the same dimensions, but having a black head, and the markings on the under surface taking the form of freckles, not bars; cere, feet, and iris yellow; bill bluish-black. Total length, 20·5 inches; culmen, 1·4; wing, 12·9; tail, 9·5; tarsus, 2·6.

Adult Female.—Similar to the male, but larger. Total length, 24 inches; wing, 14·0; tarsus, 3·1.

Young Birds.—Resemble the young of *A. palumbarius.*

Range in Great Britain.—Has occurred three times: once in Scotland, said to have been shot in Perthshire by a keeper. Two have been taken in Ireland: one, according to the late Sir Victor Brooke, on the Galtee Mountains in Tipperary, in March, 1883, and another near Parson's Town, in King's County, was recorded shortly after by the late Mr. Basil Brooke.

Range outside the British Islands.—The present species is an inhabitant of North America, where it is found in the arctic portion of the continent, breeding in the Northern United States, and as far south as Colorado.

Habits.—Similar to those of the European species.

Nest.—In trees.

Eggs.—Two or three; white, or glaucous-white, sometimes very faintly marked with pale brownish. Axis, 2·31 inches; diam., 1·70 (*Ridgway*).

THE SPARROW-HAWKS. GENUS ACCIPITER.

Accipiter, Brisson, Orn. i. p. 310 (1760).

Type, *A. nisus* (L.).

The Sparrow-Hawks are considered by some ornithologists to belong to the same genus as the Gos-Hawks, and *vice versâ.* As already mentioned, however, I do not consider these birds to be generically the same, for the Sparrow-Hawks throughout the world have always the same little bill, combined with a very long middle toe, so that if the distance of the culmen from the anterior edge of the cere to the tip of the bill be doubled, this double dimension will be found to fall short of the length of the middle toe by at least one-third. This character will be found to hold good in all the Sparrow-Hawks of the world, even the large African species, *A. melanoleucus*, which is as big as a Gos-Hawk, being found to offer no exception to this rule.

Sparrow-Hawks have almost the same cosmopolitan distribution as the Gos-Hawks, but they do not range into the Pacific Islands. About thirty species are known to science.

I. THE COMMON SPARROW-HAWK. ACCIPITER NISUS.

Falco nisus, Linn. Syst. Nat. i. p. 130 (1766).

Accipiter nisus, Newt. ed. Yarr. Brit. B. i. p. 88 (1871); Sharpe and Dresser, B. Eur. v. p. 599, pls. 355–358 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 132 (1874); Seebohm, Br. B. i. p. 135 (1883); B. O. U. List Br. B. p. 98 (1883); Lilford, Col. Fig. Brit. B. parts iv. v. (1887); Saunders, Man. Br. B. p. 323 (1889).

Adult Male.—General colour above bluish slate-colour; wings like the back, the primaries browner and barred with darker brown, more distinct below, where the inner webs of the quills are ashy-white, slightly tinged with rufous; tail bluish slate-colour, a little browner than the back, slightly tipped with whitish, and crossed with four bars of darker brown; nape slightly mottled with white; forehead and eyebrow somewhat washed with rufous; lores whitish; cheeks and ear-coverts bright rufous, the upper margin of the latter slaty-blue, like the sides of the neck; throat whitish, washed with rufous; remainder of under surface white, the breast narrowly barred across with bright rufous, some of the bars being tinged with brown and becoming narrower towards the abdomen and thighs, which are almost entirely white, like the under tail-coverts; flanks bright rufous; under wing-coverts and axillaries white, the former spotted, the latter barred with brown; cere yellow; bill dark horn-blue, yellowish at the base of the lower mandible; feet yellow; iris orange. Total length, 13 inches; culmen, 0·85; wing, 8·15; tail, 6·3; tarsus, 2·3.

The brown shade on the bars of the under surface is a sign of immaturity, and as the bird gets older, the rufous increases, and the bars get less and less distinct, till the under-parts are almost entirely rufous. This, however, is only the case in extremely old individuals.

Adult Female.—Larger than the male, and rather lighter grey; below whitish, with ashy bars, narrower than in the male, and having a large tuft of downy rufous feathers on the flanks. Total length, 15·5 inches; wing, 9·5; tail, 7·0; tarsus, 2·5.

Young Birds.—General colour above sepia-brown, all the feathers margined with rufous, especially on the crown; occiput and nape mottled with white; a distinct eyebrow, cheeks and ear-coverts, white, streaked with blackish, the hinder margin of the ear-coverts brown, washed with rufous; quills brown, barred across with darker brown, more distinct on their lower surface; tail ashy-brown, with whitish tips, and crossed with *five* bars of darker brown; under surface of body white, the throat narrowly streaked with black, the fore-neck and chest with broad rufous streaks, the flanks and thighs distinctly barred with dark brown; under tail-coverts white; under wing-coverts buffy-white, with numerous spots or bars of dark brown; iris pale yellow.

It takes some time before the young birds attain the adult plumage, and it is certain that they breed while still in the immature plumage. The first adult dress with bars underneath seems to be gained by the breaking up of the pattern on the feather, rather than by a complete moult. The feathers on the chest have, in the first stage of plumage, a broad longitudinal centre of pale rufous, and, as time goes on, this alters in shape and breaks off into bars, the colour being distributed laterally instead of longitudinally, and the rufous colour giving place to dark brown. Thus two brown bars may be seen on a feather, while the terminal one may be represented by a heart-shaped spot of light brown, with a rufous "eye," the last remains of the streak of the immature plumage, and when this spot of rufous is at last absorbed, and the brown bars complete, the bird shows the first stage towards the adult plumage. The next change is by a moult, which seems to take place at irregular seasons, and not in the first autumn, as with most birds, and then when the new feathers are assumed, they are always barred, and no return to the striped breast ever takes place, but the bars on the under-parts are at first more or less brown, and become more and more rufous with each successive moult. The numbers of bars on the tail are also indicative of the age of the bird, as they decrease, as it gets older, from five to four.

The female gains her adult plumage in the same way as the male, but does not become rufous underneath; in fact, she gets greyer with age, and the rufous tuft of down on the sides of the body becomes more pronounced.

Range in Great Britain.—The Sparrow-Hawk is found throughout the three kingdoms, wherever woodland localities occur, so that it is rarer in some spots than others, such as the Orkneys, Shetlands, and Outer Hebrides. In Ireland, Mr. Ussher says, it "breeds commonly wherever there are any trees."

A considerable migration takes place in the autumn to the east coast of Great Britain; but many of the resident birds in England, and especially Irish individuals, are very dark in colour.

Range outside the British Islands.—This species is found everywhere in Europe, and extends north to the limits of forest-growth, about lat. 69°. It is less common in Southern Europe, where its numbers are largely reinforced by the migrants from the north. It extends to Egypt and Kordofan in the winter, and at that time of year also visits Aden.

Eastward it extends across Siberia to Corea and the Japanese Islands, being resident in these countries, as it is also in the Himalayas, where it breeds. In winter it visits China as far south as Canton. A large race, *A. major*, is recorded from Switzerland, and a dark-coloured resident race, *A. melanochistus*, from the Himalayas.

Habits.—In its ways the Sparrow-Hawk is a miniature edition of the Gos-Hawk, possessing all the fire and pluck of that bird, but of course being much less powerful, and feeding on smaller game. It is an inhabitant of the woods, and is remarkably swift and agile in its movements, sallying forth from its retreat and snatching unsuspecting birds on the trees or in the hedgerows. A Falcon will not pursue a bird which has taken refuge in a tree, but I have seen a Sparrow-Hawk follow a Blackbird through a tangled willow-thicket, doubling as its quarry doubled, till it drove it out across the river and might have caught it, had I not been interested in the changes of plumage which the species undergoes, and to which I have alluded above. As it was, I forgot for the moment all about the Ducks I had been waiting for so long, and bagged the Sparrow-Hawk for the British Museum, where it is still.

The dread with which the bird is regarded by all the smaller species shows that they hold the Sparrow-Hawk in considerable awe, though Swallows and Martins will mob it freely as it crosses from one wood to another. Its method of capturing small birds is, however, mostly by seizing them unexpectedly, before they have time to escape by hiding. Thus the Hawk will fly along the side of a wood or hedgerow, and suddenly snatch a small bird from the twig on which it sits singing, or drop down on it as it crouches in the grass. Besides small birds, it also catches mice and rats, but it can be very destructive to chickens and young Pheasants and Partridges, and is, therefore, shot and trapped by keepers on every occasion.

Nest.—The Sparrow-Hawk breeds in May, and usually, Mr. Seebohm says invariably, builds its own nest, which is composed of sticks, and the tree selected appears to vary according to locality, for whereas Mr. Seebohm gives preference to the oak, as the favourite tree selected by the bird, he mentions also the alder, and not unfrequently a pine-tree as a nesting-site. My own experience in Hampshire, where I have taken many nests at Avington, is in favour of the last-named tree, and I never remember the nest being built in any other. It is always placed at a considerable height, and near the trunk. The female sits very close, and I remember one occasion, when three of us had come out to take the nest and shoot the old birds. After clapping our hands and knocking the tree to see if the old bird was on the nest, we were preparing to take up our stations to await its return, when it occurred to me to see if I could hit the nest with a pine branch which was lying near. My first attempt sent it smartly against the bottom of the nest, and off flew the bird like an arrow, taking all the party by surprise. She had been sitting close the whole time, and had disregarded all the talking and noise we had made beneath the tree. After flying round for some time, at a great height in the air, above the nest, she disappeared for half an hour, when she suddenly came gliding through the wood towards her home, and was shot by Captain Shelley. The male was trapped the next morning on the nest, and both birds proved to be in immature plumage.

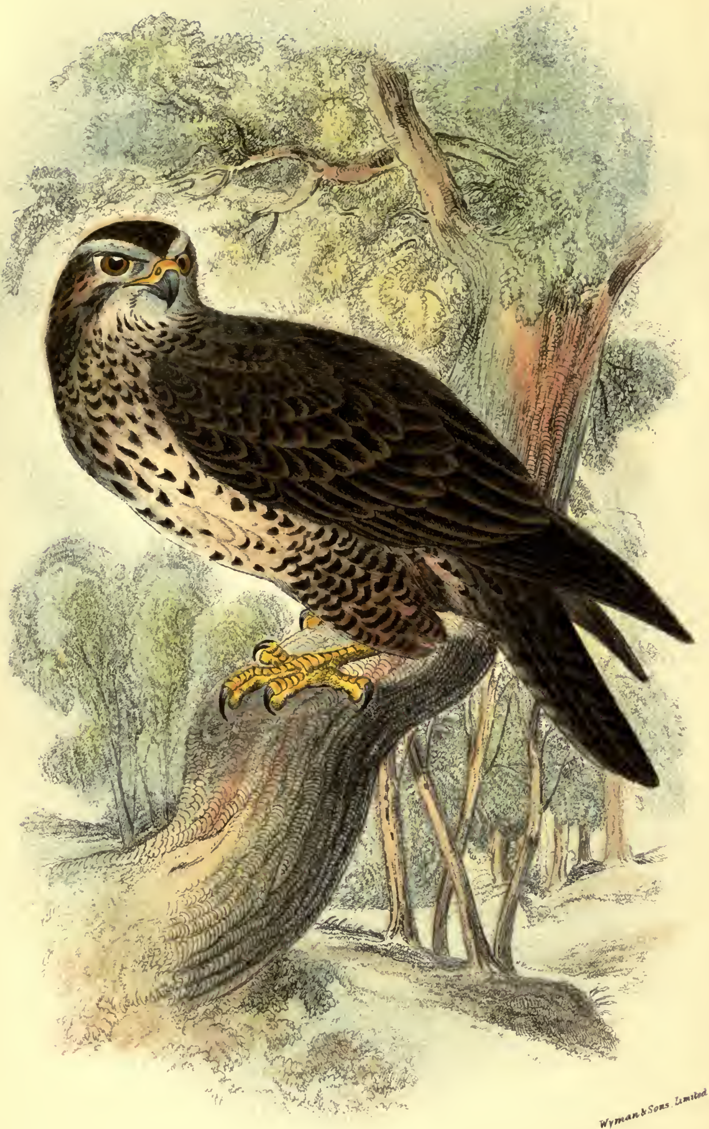
Eggs.—The eggs of the Sparrow-Hawk vary greatly in their colour and markings, and are sometimes very handsome. The clutch consists of from three to four eggs, on rare occasions five. The ground-colour is a faint greenish-white or else quite white, and sometimes the eggs are entirely unspotted. Others are blotched or even marbled with dark reddish-brown, in which chestnut and lilac are mingled. The distribution of the markings is thoroughly irregular, for sometimes these brown or rufous markings are distributed over the whole egg, and are more or less broken up into small spots or blotches, while in others the rufous markings are gathered at one or other end of the egg, leaving its opposite pole uniformly white, while in certain specimens in the British Museum the markings form a ring round the centre of the egg, leaving the two ends unspotted and not marked in any way. Axis, 1·55–1·75; diam., 1·25–1·4.

THE BUZZARDS. SUB-FAMILY BUTEONINÆ.

In all the remaining Birds of Prey we find the legs much shorter than in the Hawks and Harriers, and the proportions of the tibia and tarso-metatarsal bones are different, the former being much longer than the latter, and not equal in length, as it is in the long-legged Hawks.

The Buzzards may be recognised from the Eagles and Falcons, which are the other two groups of these shorter-legged Birds of Prey, by having the hinder aspect of the tarsus scaled, and not reticulated. By this character we know that some of the largest of Raptorial birds, such as the Great Harpy Eagle (*Thrasaëtus harpyia*) of South America, are Buzzards

PLATE XLIV.



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COMMON BUZZARD

and not true Eagles. As a rule, the members of the Subfamily *Buteoninæ* are somewhat sluggish and heavy birds, not possessing the dash of an Eagle or a Hawk, but resembling the former in general appearance and build. The range of the Buzzards is almost cosmopolitan, though the Australian members of the genus are not typical Buzzards, and are more like large Gos-Hawks in appearance.

THE TRUE BUZZARDS. GENUS BUTEO.

Buteo, Cuvier, Leçons Anat. Comp. i. Tabl. Oiseaux (1800).
Type, *B. buteo* (L.).

The typical Buzzards have rather a long wing and a head like that of an Eagle, with a bony shelf above the eye, a long tail, more than twice the length of the tarsus, which is never entirely feathered. The nasal aperture is a long oval, and there is no tubercle, as in the Falcons and some other Birds of Prey. The Buzzards are found throughout the northern parts of both Hemispheres, and in North America many of the species are migratory, and visit South America in winter. In Africa several species of True Buzzards are resident, and they are found throughout the greater part of Asia, but do not extend below Southern China and the Burmese Provinces, being absent in the Malay Peninsula and Archipelago.

I. THE COMMON BUZZARD. BUTEO BUTEO.

Falco buteo, Linn. Syst. Nat. i. p. 127 (1766).
Buteo vulgaris, Newt. ed. Yarr. Brit. B. i. p. 109 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 186 (1874); Dresser, B. Eur. v. p. 449, pl. 331 (1875); Seebohm, Br. B. i. p. 117 (1883); B. O. U. List Br. B. p. 94 (1883); Saunders, Man. Br. B. p. 311 (1889); Lilford, Col. Fig. Br. B. part xvii. (1891).
Buteo fuscus, Macg. Br. B. iii. p. 183 (1840).

(*Plate XLIV.*)

Adult Male.—General colour above ashy-brown, rather paler on the scapulars and wing-coverts, which have more or less distinct white margins; on the nape some white streaks, the forehead and sides of face being also narrowly streaked with white; under surface of body yellowish-white; the breast, sides of body, and thighs more uniform brown, clouding the whole of these portions of the under-parts; primary-quills dark brown, externally shaded with ashy-grey, with distinct bars of darker brown, less plainly indicated on the secondaries, which are paler brown like the back, the inner webs of all the quills white for two-thirds of their length; tail ashy-brown, with a rufous shade towards the tip, and crossed with twelve or thirteen bands of darker brown; cere yellow; bill bluish-black, darker towards the tip; feet yellow; iris yellowish-brown. Total length, 22 inches; culmen, 1·45; wing, 15·0; tail, 9·0; tarsus, 3·1.

Adult Female.—Similar to the male, and very little larger. Total length, 23 inches; wing, 16·5; tail, 9·5; tarsus, 3·1.

Young Birds.—The young of the Common Buzzard is always much paler than the adults, and frequently has the head and under surface of the body creamy-white, with a few streaks and spots of brown.

I consider all these light-coloured birds to be immature, though some ornithologists regard this pale plumage as indicative of albinism, and the darker forms to be melanistic. While admitting that Buzzards have a tendency to melanism, my experience has been that the birds grow darker with age, and have fewer bars on the tail than when they are young.

Range in Great Britain.—The Common Buzzard is by no means so plentiful in the British Islands as it used to be, owing to the ill-advised way in which it has been shot down by game-preservers. In Scotland and Wales, however, it is still to be found in the wilder districts, and in many parts of England specimens are obtained on migration: these are mostly young birds. In Ireland Mr. R. J. Ussher says that in Donegal, Londonderry, Antrim, and Down, where it was formerly recorded by Thompson as resident, it has now been nearly exterminated, and the bird is, therefore, as rare in its ancient habitat as it is in England.

Range outside the British Islands.—Commonly distributed over the greater part of Western Europe, but its eastern range is by no means satisfactorily determined, as in Russia it appears to coalesce with the range of *Buteo desertorum*, or the intermediate form known as *B. zimmermannæ*. In Scandinavia it breeds as far as 60° N. lat., but its eastern range is believed to be the Baltic Provinces and the Vistula. It is, to a great extent, a migratory species in the autumn, and passes over Heligoland in great flights, and in Southern Europe it is decidedly local as a breeding species, and in the Mediterranean countries it again meets its rufous ally, *B. desertorum*.

Habits.—The food of the Buzzard consists largely of field-mice, frogs, reptiles, especially slow-worms, and occasionally small birds. It will therefore be admitted by all that this Raptorial bird is of great use in keeping down small vermin, and, like the Barn-Owls, ought to be rigorously protected, and not shot down, as is, unfortunately, too often the case with both species. In Germany the utility of the Buzzard in forest districts is better recognised.

In its ways the Buzzard is rather a sluggish bird, and may often be seen sitting motionless, sometimes for hours together, on a tree or on the ground, only moving when it sees a mouse or other small prey. At other times it circles high in the air, uttering its plaintive, squealing cry; and when in flight the action of the bird is described by all observers to be imposing and graceful.

Nest.—The nest is generally placed in a tree, but sometimes on rocks, and one, taken in Ross-shire a few years ago, is in the British Museum. The birds had built their rough nest of sticks on the floor of a small hollow in the cliff, in a well sheltered situation. The nest is made of rough and ragged sticks for a foundation, with more slender twigs on the top, and is rather flat. A curious habit of the bird is to line the nest with green leaves, which it evidently renews from time to time. Mr. Seebohm found this lining of green leaves in ten out of eleven nests, some of which contained eggs and some young birds; and it was only in a nest in which the young ones were far advanced that the lining was absent. Buzzards, however, are not the only Birds of Prey which line their nests with green leaves, but the object of this proceeding is not clear.

Eggs.—From two to four in number, generally three. The ground-colour is white or faint greenish-white, and the eggs are often quite uniform, or show faint spottings or marblings of pale rufous. On the other hand, they are sometimes richly marked and clouded with rufous or rufous-brown. Every gradation in a series of clutches is exhibited in the Seebohm collection in the British Museum, from unsullied white eggs to those in which the ground-colour is almost hidden by a confusion of mottlings and cloudings of rich chestnut or rufous-brown. Axis, 2·1–2·4; diam., 1·7–1·9.

II. THE DESERT BUZZARD. BUTEO DESERTORUM.

Falco desertorum, Daud. Traité, ii. p. 164 (1800).
Buteo desertorum, Sharpe, Cat. B. i. p. 179 (1874); Dresser, B. Eur. v. p. 457, pl. 332 (1875); Seebohm, Br. B. i. p. 122, note (1883); B. O. U. List Br. B. p. 94 (1883).

Adult Male.—Smaller than *B. buteo*, and much more rufous, especially on the upper tail-coverts and tail; the bars on the tail, nine or ten; cere lemon-yellow; bill dark lead-colour, lighter near the throat and cere; feet lemon-yellow; iris light hazel or yellowish. Total length, 21 inches; culmen, 1·55; wing, 13·4; tail, 7·8; tarsus, 3·0.

Young Birds.—Much paler than the adults, especially on the under surface, the tail always showing a rufous tint, and having as many as thirteen bars.

The rufous character of the plumage of this Buzzard is the best test for recognising it from the Common Buzzard, but it is sometimes very difficult to distinguish the two species, as *B. desertorum* gets very dark in its older stages, while *B. buteo* not unfrequently exhibits a shade of rufous on the tail.

Range in Great Britain.—The present species has been supposed to have occurred three times in England: twice in Northumberland, and once at Everley in Wiltshire, where a specimen was shot in September, 1864. The two Northumbrian birds may have been wrongly identified, but the Wiltshire example was considered by the late Mr. J. H. Gurney to be an undoubted Desert Buzzard.

Range outside the British Islands.—This species occurs in the

Mediterranean countries and in South-eastern Europe. It is a common species in certain parts of Africa, and is apparently only a rare visitor to India, the specimens often identified as *B. desertorum* from this country being, in all probability, referable to *B. plumipes.*

III. RED-TAILED BUZZARD. BUTEO BOREALIS.

Falco borealis, Gm. Syst. Nat. i. p. 266 (1788).
Buteo borealis, Sharpe, Cat. B. Brit. Mus. i. p. 188 (1874); B. O. U. List Br. B. p. 94 (1883).

Adult Male.—Of large size, and distinguished by its rufous tail, the head and ear-coverts being smoky-brown, varied with darker brown streaks; the tail-feathers tipped with white and crossed with a sub-terminal band of blackish-brown; under surface of body whitish, the breast streaked and the abdomen mottled with bars of dark brown; cere and gape greenish-yellow; bill bluish-black; feet yellow; iris pale amber. Total length, 21 inches; culmen, 1·55; wing, 15·1; tail, 8·5; tarsus, 3·6.

Adult Female.—Similar to the male, but larger. Total length, 25 inches; wing, 17·5; tail, 9·5; tarsus, 3·8.

Young Birds.—Brown, with the head and neck streaked with white; sides of face whitish, streaked with brown, the cheeks uniform dark brown; tail brown, slightly washed with rufous, and crossed with nine bars of darker brown; under surface of body pure white, with brown stripes on the throat, broader on the breast, the abdomen and flanks with arrow-head marks of brown; thighs white, with small transverse spots of pale rufous.

Characters.—The red tail of the adult sufficiently distinguishes this Buzzard. The young birds may be distinguished by the longer wing, and by the particoloured thighs, but as there are many other species of Buzzard which possess these characters, only an examination by an expert can decide any of the young birds belonging to the genus *Buteo.*

Range in Great Britain.—The Red-tailed Buzzard is said to have occurred once in Nottinghamshire, in the autumn of 1860, and is recorded in the list of the birds of that county by Messrs. Sterland and Whitaker.

Range outside the British Islands.—A North American species, found in the eastern portion of that continent, and westwards to the border of the Great Plains, according to Mr. Ridgway (Man. N. Amer. B. p. 232) occurring south in Eastern Mexico, and perhaps extending to Panama.

IV. THE RED-SHOULDERED BUZZARD. BUTEO LINEATUS.

Falco lineatus, Gmelin, Syst. Nat. i. p. 274 (1788); Sharpe, Cat. B. Brit. Mus. i. p. 191 (1874); Newton, ed. Yarr. Brit. B. i. p. 113 (1871); B. O. U. List Br. B. p. 94 (1883).

Adult Male.—Easily distinguished by the colour of the lesser wing-coverts, which are conspicuously margined with rufous, so as to form a shoulder-patch; the quills distinctly spotted with white on their outer webs; the tail with from four to six alternate bars of black and white; cere yellow; bill bluish-black; feet yellow; claws black; iris bright amber. Total length, 21 inches; culmen, 1·4; wing, 13·2; tail, 8·5; tarsus, 3·1.

Range in Great Britain.—A specimen of this Buzzard is said to have been obtained in Inverness-shire in 1863, but, as the Committee of the British Ornithologists' Union remark, the record is probably the mistake of a dealer.

Range outside the British Islands.—A North American species, occurring northward to Nova Scotia, and westward to the edge of the Great Plains.

THE EAGLES. SUB-FAMILY AQUILINÆ.

The chief distinguishing character of the Eagles is the reticulation of the hinder aspect of the tarsus. This is very often hidden by feathers, but traces of the network of the scales can generally be found on parting the feathering of the back of the tarsus. The species of Eagles are numerous, and they are distributed nearly over the entire globe; in fact, there is no portion of the Old World in which a Sea-Eagle of some kind does not occur. There is great variety in size among the members of the Sub-family, some being large and powerful, while others are little bigger than Sparrow-Hawks, and yet belong typically to the Eagles. The connection between them and the Buzzards is very close, while by way of the Kites they also approach the Falcons.

Among the Eagles are to be found the largest of the Birds of Prey, such as the Læmmergeier, or "Bearded Vulture" as it is often called, a bird which, though structurally an Eagle, much resembles the Scavenger Vultures in many of its habits. It resembles the latter in being bare-footed, whereas all the species of the true *Aquila* and its allied genera have feathered tarsi. In this feathered group are included all the beautiful Crested Eagles (*Spizaëtus*) and the Hawk-Eagles (*Eutolmaëtus*), as well as the curious Egg-devourer (*Neopus*).

The bare-footed section comprises all the Sea-Eagles (*Haliaëtus*) and the Snake-Eagles (*Circaëtus*), besides a number of tropical forms, such as *Haliastur*, which is half a Kite and half a Sea-Eagle, and connects the latter with the true Kites.

THE BUZZARD-EAGLES. GENUS ARCHIBUTEO.

Archibuteo, Brehm, Isis, 1828, p. 1269.

Type, *A. lagopus* (J. F. Gmelin).

These birds have always been considered to be true Buzzards, and have generally been placed by ornithologists either in the genus *Buteo* or in close proximity, but the reticulation of the tarsi shows that they really belong to the *Aquilinæ*. In writing the "Catalogue of Birds in the British Museum," I made the curious mistake of figuring the tarsus of *Archibuteo* to show that it was reticulated behind, and then placed the genus among the Buzzards, thus stultifying the arrangement I had been at great pains to emphasise—just one of those annoying *faux pas* which one makes sometimes without any apparent reason. Mr. Seebohm discovered my mistake and went so far as to put the Rough-legged Buzzards into the genus *Aquila*, because Dr. Gadow had found resemblances in the anatomy of the above-mentioned species and the Spotted Eagle. To put these two birds into the same genus is, however, more than Dr. Gadow ever intended, and although the Buzzard-Eagles bear a very close resemblance to the True Eagles, the nostril is not exposed as in the latter birds, and is, moreover, vertical, with an overhanging shelf, whereas in the Eagles the nostril is generally a perpendicular oval, and exposed, or, in rare instances, round.

I. THE ROUGH-LEGGED BUZZARD-EAGLE. ARCHIBUTEO LAGOPUS.

Falco lagopus, Gmelin, Syst. Nat. i. p. 260 (1788).
Buteo lagopus, Macg. Brit. B. iii. p. 193 (1840); Newt. ed. Yarr. Br. B. i. p. 117 (1871); Saunders, Man. Br. B. p. 313 (1889); Lilford, Col. Fig. Brit. B. part xiv. (1890).
Archibuteo lagopus, Sharpe, Cat. B. Brit. Mus. i. p. 196 (1874); Dresser, B. Eur. v. p. 471, pls. 334, 335 (1875); B. O. U. List Br. B. p. 95 (1883).
Aquila lagopus, Seebohm, Br. B. i. p. 111 (1883).

Adult Female.—General colour above deep brown, the head and neck white, streaked with dark brown, especially on the cheeks and sides of the head; lesser wing-coverts and scapulars with white bases, and margined with buff, imparting a streaked appearance to these parts; quills brown, white for the greater part of the inner web; upper tail-coverts white, with a sub-terminal bar of brown; tail white, inclining to ashy-brown and tinged with rufous for the terminal third of its length, the tip white with a broad sub-terminal bar of black; under surface of body white, the throat washed with buff like the sides of the neck, and streaked with dark brown, more broadly on the breast; lower breast and abdomen dark brown, the latter mottled with buff in the centre; under tail-coverts white; thighs and tarsal plumes buffy-white, spotted with brown; cere yellow; bill dark horn-colour; toes yellow; claws dark horn-colour; iris hazel. Total length, 26 inches; culmen, 1·45; wing, 18·7; tail, 10·0; tarsus, 3·1.

Adult Male.—Similar to the female, but a little smaller. Total length, 22·5 inches; wing, 17·1; tail, 10·0; tarsus, 2·8.

Young Birds.—Resemble the adults, but are rather browner, especially below, where the breast is more streaked; the tail also brown for its terminal half, with no perceptible sub-terminal band.

Characters.—Distinguished from the ordinary Buzzards by the feathered tarsi, and from any of the feathered-legged Eagles by the different form of the nostrils, and by the lesser size.

Range in Great Britain.—An autumn visitor, occurring in some years, as in 1891, in great numbers. It may be considered almost a regular visitor to Scotland, and some specimens are obtained in the eastern counties nearly every autumn, but it is not often found in the south or west of England, and only about half a dozen instances of its capture in Ireland have been recorded. The species has even been said to breed in Great Britain, but the evidence is by no means satisfactory, and more exact confirmation of the fact is essential.

Range outside the British Islands.—The Rough-legged Buzzard-Eagle is distinctly a northern bird, being commonly distributed from Scandinavia into the valley of the Lena in Siberia. It breeds in Russia, as far south as 56° N. lat., and also in the Baltic Provinces, but in more southern latitudes it is only known as a winter visitor, occurring at this season of the year in the Pyrenees, in Italy, and the Mediterranean countries. In North America it is represented by a closely allied species, *Archibuteo sancti johannis*.

Habits.—Very little has been recorded of the habits of this species, but it is said to be a frequenter of the open country, rather than of wooded districts like a Buzzard, and in many of its habits it is more of an *Aquila* than a *Buteo*. It has a peculiar "mewing" cry, like that of a cat. Its food consists of rabbits and other small Mammalia, but it also eats reptiles and captures water-fowl. Its flight is said by Professor Newton to be slow, but smooth, and, except during its migrations, is seldom continued for any great length of time.

Nest.—Composed of sticks, according to Wolley, who took several nests of this species in Lapland. He says: "The nest was small, made of old sticks, with a few twigs of the fir and a little of the black hair-like lichen which grows so abundantly in the northern forests. The situation was near the edge of a great marsh with trees all around. Other nests were in taller trees, and were larger in size, and the bird will occasionally use an old nest of the Osprey."

Eggs.—Three or four in number, though sometimes only two are found. The ground-colour is a dull white or greenish-white, and although the markings and spots vary in number and intensity, absolutely white eggs, without any markings, seem to be almost unknown. The rufous markings are generally distributed pretty evenly over the egg, and are intermixed with cloudings of a lighter brown, principally at the larger end of the egg. In one clutch in the Seebohm collection, from Finmark, the entire eggs are clouded with pale brown mottlings, forming here and there large blotches. Axis, 2·1–2·35; diam., 1·65–1·8.

THE TRUE EAGLES. GENUS AQUILA.

Aquila, Briss. Orn. i. p. 419 (1760).

Type. *A. chrysaëtus* (L.).

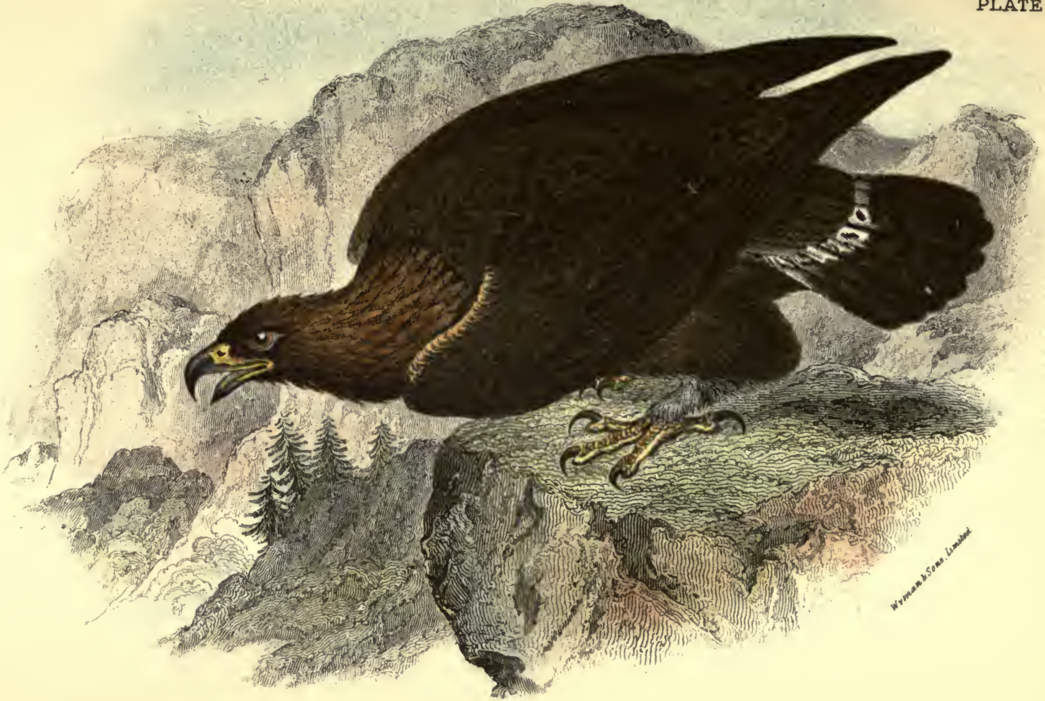
Eagles are found throughout the northern parts of both Hemispheres, as far as Mexico in America, and in the Old World throughout Europe, Africa, and Asia, but not extending into the Malayan regions or to Australia. The large size of the Eagles is the best character by which our English species can be distinguished, but the Lesser Spotted Eagle is an exception, as it is very little bigger than a Buzzard. It must be remembered that all members of the genus *Aquila* have feathered legs, and thus it is always easy to tell a True Eagle from a Sea-Eagle, which has the legs devoid of feathers. The claws, or talons, of the Eagles are also extremely powerful, and fitted for taking large prey, presenting a marked difference in strength to the talons of the Vultures, whose feet are adapted for holding, not seizing, their prey.

I. THE GOLDEN EAGLE. AQUILA CHRYSAETUS.

Falco chrysaëtus, Linn. Syst. Nat. i. p. 125 (1766).
Aquila chrysaëtus, Macg. Brit. B. iii. p. 204 (1840); Newt. ed. Yarr. Brit. B. i. p. 11 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 235 (1874); Dresser, B. Eur. v. p. 533, pl. 345 (1880); Seeb. Brit. B. i. p. 96 (1883); B. O. U. List Br. B. p. 96 (1883); Saunders, Man. Br. B. p. 317 (1889); Lilford, Col. Fig. Br. B. part xxv. (1893).

(*Plate XLV.*)

Adult Male.—General colour above blackish-brown, often with a very perceptible purplish gloss, the feathers of the mantle and the wing-coverts with paler edges; quills blackish, PLATE XLV.



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GOLDEN EAGLE.

ashy-brown below, the secondary quills ashy-grey, mottled with brown, the terminal third of the feather blackish; tail ashy-grey, blackish at the tip and browner towards the base, the grey forming an irregular band across the middle of the tail, the basal portion of which is also mottled with grey; head brown, the nape and hind-neck rich tawny, the feathers lanceolate in shape, with brown bases, and imparting a streaked appearance to this part of the neck; sides of the face light tawny, paler than the neck; cheeks and under surface of body blackish, the feathers mostly brown at the base, and the feathers of the leg pale brown, as also the under tail-coverts; under wing-coverts blackish; cere yellow; bill bluish horn-colour, darker at the tip; feet yellow, claws black; iris hazel. Total length, 32 inches; culmen, 2·6; wing, 24·5; tail, 13·0; tarsus, 3·7.

Adult Female.—Similar to the male in colour, but larger. Total length, 35·5 inches; wing, 27·5; tail, 13·0; tarsus, 3·8.

Young Birds.—These can always be distinguished by the colour of the tail, which is white for more than the basal half, and brown for nearly the terminal half, so that there is a very broad band at the end of the tail; otherwise the colour of the young birds does not differ very much from that of the adults, excepting that there is a good deal of white at the bases of the feathers, especially on the under surface of the body, which is rather lighter brown than in the old birds.

Nestling.—Covered with white down.

Range in Great Britain.—The breeding-range of the Golden Eagle is now restricted to the highlands of Scotland and some of the western isles, where the bird is protected. Formerly it used to nest in the Orkneys, and also in the south of Scotland, while it has only been extinguished as a breeding bird in the Lake district during the last hundred years, and two centuries ago it nested in Wales and Derbyshire. Young birds of the present species occur in the lowlands of Scotland not unfrequently, and more rarely visit England, but the reported captures of Golden Eagles generally refer to young White-tailed Eagles, which may always be distinguished by their bare legs.

In Ireland, Mr. R. J. Ussher says the chief breeding-places of "the Golden Eagle are now a few spots in Western Mayo.

It breeds still more sparingly in Western Donegal, and probably in Western Galway and Kerry, but it has ceased to breed, as formerly, in Antrim, Tyrone, Down, Tipperary, Waterford, Leitrim, and Sligo, but visits the mountainous parts of these counties occasionally."

Range outside the British Islands.—The Golden Eagle is found throughout the mountains of Europe and Northern Africa, and extends to the extreme east of Asia, as far as Kamtchatka and the Japanese Islands. It also breeds in the Himalayas. Many races or sub-species have been recognised, chiefly by the late Dr. Severtzov and the Russian naturalists, but I have never been able to recognise more than one species of Golden Eagle, though in some localities the birds are larger and darker than in others, but the supposed differences in the amount of white on the tail- and body-feathers are dependent, I am certain, solely on the age of the individuals, and are never specific.

In North America the Golden Eagle is found in the mountainous regions of the northern parts, but has not yet been noticed in Greenland.

Habits.—Owing to the destruction which this large Eagle is capable of committing on sheep-farms, the bird has been shot and trapped almost to extinction in the British Islands. The principal food of the Golden Eagle in Scotland is the Blue or Mountain Hare, and it also captures rabbits or an occasional Grouse, while it is well known that it will devour carrion, which propensity often leads to its being taken in traps. The flight of a Golden Eagle is certainly a wonderful sight to see, according to all observers, and I have seen nothing finer than the flight of the Eagles in the Himalayas (probably Imperial Eagles), soaring round and round, high in the air, without any apparent motion of the wings, the ends of which are slightly upturned in soaring, so that daylight can be seen between the tips of the long primaries. Then follow a few rapid beats of the wings, and then another round of circular movements, until the bird winds itself out of sight or tops the mountain crest into the next valley. Sometimes the bird will sit motionless on a rock or favourite perch for hours, but it is when the Golden Eagle is on the wing, that we can understand why its majestic movements inspired the idea that it was the

"King of Birds." Otherwise there is nothing very awe-inspiring in the habits of the Eagle, which are further sullied by its carrion-eating propensities. Mr. Seebohm says: "The Eagle in its habits is more of a Vulture than a Falcon, and his motions are sluggish, cowardly, and tame, compared with the death-swoop of the Peregrine, or the brilliant performance of the Sparrow-Hawk, or the Merlin, who would not deign to feast on such lowly fare."

Nest.—The Golden Eagle is an early breeder, and its nest has been found while the country was still covered with snow. The young are hatched by the end of April. The nest is a large and rough structure of sticks and heather, with a lining of fern and moss and tufts of green herbage. It is often as much as five feet in diameter, and is generally placed on a cliff, more rarely on a tree, in the British Islands at least.

Eggs.—Two, occasionally three, in number. They vary in colour from white to richly marked varieties. Sometimes rufous spots are distributed over the whole egg, while in the more handsomely coloured ones the whole surface is clouded with light earthy-rufous, while on some of these clouded eggs, bright rufous or rufous-brown markings are interspersed. Axis, 2·8–3·3; diam., 2·25–2·45.

II. THE LARGER SPOTTED EAGLE. AQUILA MACULATA.*

Falco maculatus, Gm. Syst. Nat. i. p. 258 (1788).
Aquila nævia, Gm.; Newt. ed. Yarr. Brit. B. i. p. 20 (1871); Seebohm, Brit. B. i. p. 106 (1883); Saunders, Man. Br. B. p. 315 (1889); Lilford, Col. Fig. Brit. B. part xxv. (1893).
Aquila clanga, Pall.; Sharpe, Cat. B. Brit. Mus. i. p. 246 (1874); Dresser, B. Eur. v. p. 499, pl. 339 (1878); B. O. U. List Br. B. p. 96 (1883).

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* The difficulty of assigning a specific name for the Spotted Eagles has long been recognised by ornithologists, and the smaller of the three races has generally been called *Aquila nævia*, the larger form *A. clanga*, and the Indian form *A. hastata*. Dr. W. T. Blanford has recently reviewed the the whole of the evidence, and accepts the verdict that the *Falco nævius* of Gmelin refers to the Common Buzzard, and that the name *maculata* belongs to the larger form, generally known as *Aquila clanga* of Pallas. I agree with Dr. Blanford in adopting this name.

Adult Male.—General colour above and below dark chocolate-brown, almost black. The wing-coverts rather lighter brown, and the hinder crown and nape inclining to sandy-buff; quills and tail almost uniform brown, the latter with a few greyish mottlings or indications of bars in old individuals. Total length, 26·5 inches; culmen, 2·4; wing, 20·5; tail, 10·5; tarsus, 3·9.

Adult Female.—Similar to the male, but larger. Total length, 29 inches; wing, 21·5; tail, 11·8; tarsus, 4·2.

Young Birds.—Of a purplish-brown colour; wing-coverts like the back, the median coverts with a few longitudinal streaks of dull white, which become much larger and take the form of oval spots on the greater and primary-coverts, as well as on the tips of the scapulars; the quills blackish, the secondaries rather browner, with faint bars of black, and oval white spots at the tips like the scapulars; lower back and rump with distinct triangular spots of ochraceous-buff, the upper tail-coverts almost uniform buffy-white; tail-feathers blackish, browner towards their ends, which are tipped with whity-brown, the feathers crossed with three or four bars of blackish-brown near the tips; under surface of body blackish, browner on the chin, the breast streaked with pale brown down the centre of the feathers, the abdomen and feathers of the leg rather more ochraceous; under tail-coverts ochraceous-buff; under wing-coverts blackish, the axillaries rather browner; greater under wing-coverts ashy-brown, and white at the base like the primary-quills. Total length, 26 inches; wing, 20; tail, 10·0; tarsus, 3·9.

Characters.—An adult Spotted Eagle can always be told from an adult Golden Eagle by its smaller size, and by its tail being uniform below. This character will also distinguish the young birds of the two species, the Golden Eagle having the base of the tail white, and showing none of the large spots on the wings, from which the Spotted Eagle has derived its popular name.

Range in Great Britain.—A rare and occasional visitant, occurring apparently only in late autumn and winter. Two were obtained near Youghal in Ireland in January 1845. Two more have been shot in Cornwall in December 1860 and

November 1861. In 1875 a specimen was found dead on Walney Island, and on the 31st October, 1885, another was shot in Northumberland (cf. Saunders, *l.c.*). In November 1891, three or four specimens were obtained in the eastern counties. Mr. J. H. Gurney states that all the British specimens examined by him belonged to the larger race of Spotted Eagle, and I have, therefore, somewhat taken for granted that the small Spotted Eagle (*A. pomarina*) has not yet visited us. An examination of every specimen killed in these islands is desirable, as Mr. Seebohm believes that the Irish and Cornwall specimens belonged to the small race.

Range outside the British Islands.—There are three races of Spotted Eagle, named respectively *Aquila pomarina*, *A. maculata*, and *A. hastata*. The first two of these are found in Europe, *A. hastata* being an Indian species and therefore not concerning us in the present work. The difference between *A. pomarina* and *A. maculata* consists of size chiefly, the latter being a larger and a darker bird, both of them having, in their young plumage, the distinct spotting of the wing. *A. pomarina* is distinctly smaller than *A. maculata*, and has the wing under twenty inches in both male and female. This smaller race, which is the one we should expect to be the visitor to England instead of *A. maculata*, breeds in Northern Germany and the Baltic Provinces of Russia, and is found in the Pyrenees, and even in Spain and North Africa, but is apparently rare in all the Mediterranean countries. *A. pomarina* is said to reach to Bessarabia and the Caucasus, and in winter migrates down the Nile Valley to Abyssinia, and, in my opinion, will probably be found still farther to the south.

Aquila maculata, on the other hand, is a bird of Turkey and Southern Russia, occurring also in Hungary, and reaching in its eastern range through Central Asia to Eastern Siberia and Northern China. This form winters in India, and also migrates down the Nile Valley to Abyssinia and probably farther southward.

Habits.—The Spotted Eagle is said to resemble a Buzzard in its ways, and to feed on frogs, lizards, snakes, and even to eat grasshoppers and other insects, while it will also devour carrion. It is an inhabitant of the swampy forests, and Mr. Seebohm says that, during his search for the nest of the Spotted

Eagle in Pomerania, he never found one in a dry forest. The only nest which I have seen myself was in Hungary, and was situated not more than forty feet from the ground, in a forest through which we proceeded in small shooting parties. The bird sat so close that none of the party suspected that the nest was tenanted; and when, after we had been chatting for some minutes below the tree, the Eagle suddenly flew off, we were so much taken by surprise that she was missed by all three of the party.

Nest.—This is generally a large structure, and Mr. Seebohm gives the dimensions of one found by himself in Pomerania as four feet long, two and a half feet wide, and two feet high. It was very flat, like the nests of all Birds of Prey, the depression in the centre not being more than four or five inches. "The foundation was composed of sticks nearly an inch thick, but at the top they were very slender. The final lining was slender beech-twigs with fresh green leaves on them. There was also a little down and a feather or two, which had probably been accidentally rubbed off the breast of the parent bird." Another nest was lined with fresh green grass. The tree selected by the Spotted Eagle is generally a beech, but the nest is also found in oak- and fir-trees.

Eggs.—These are laid early in May, and are generally two in number. Sometimes only one is found, and on very rare occasions a nest has been known to contain three eggs. They are very like a small edition of Golden Eagles' eggs, and are alike in shape at both ends, but they are, of course, smaller than the eggs of that bird. In those of both forms of Spotted Eagle there seems to me to be an occasional tendency for the rufous markings to congregate at one end of the egg, which is not seen in those of *A. chrysaëtus*. Axis (in eggs of *A. pomarina*), 2·3–2·65; diam., 1·9–2·1; axis (in those of *A. maculata*), 2 45–2·65; diam., 1·9–2·1.

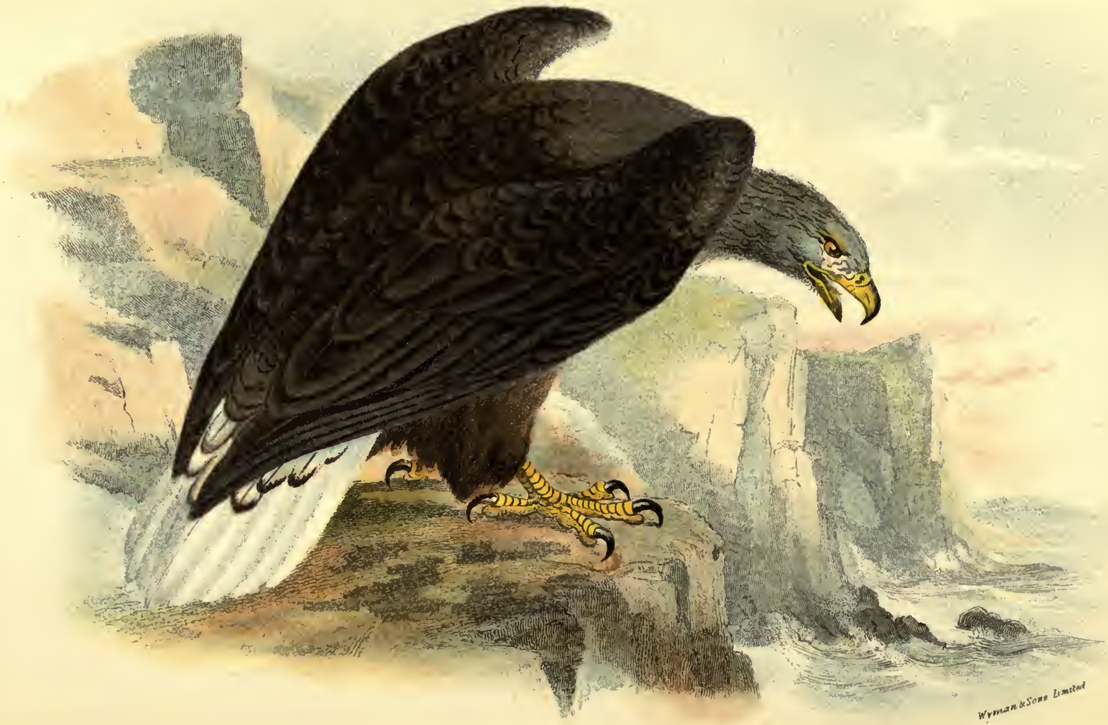
THE SEA-EAGLES. GENUS HALIAËTUS.

Haliaëtus, Savigny, Syst. Ois. d'Egypte, p. 254 (1809).

Type, *H. albicilla* (L.).

The Sea-Eagles have the tarsi bare of feathers, and the extent of the bare part of the tarsus is less than the length of the middle

PLATE XLVI.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WHITE-TAILED SEA-EAGLE.

toe. The nostrils are perpendicular ovals, the tail is slightly rounded, and the bare tarsus is scaled in front and reticulated behind.

Members of the genus *Haliaëtus* are found in the northern portions of the New World, but are not known from Central or South America. In the Old World they are found almost everywhere, and one species, *Haliaëtus leucogaster*, is an inhabitant of the Malayan Archipelago, Australia, and even extends to some of the Oceanic Islands.

I. THE WHITE-TAILED EAGLE. HALIAETUS ALBICILLA.

Vultur albicilla, Linn. Syst. Nat. i. p. 123 (1766).

Haliaëtus albicilla, Macg. Brit. B. iii. p. 221 (1840); Newt. ed. Yarr. Brit. B. i. p. 25 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 303 (1874); Dresser, B. Eur. v. p. 551, pl. 348 (1875); B. O. U. List Br. B. p. 97 (1883); Seebohm, Br. B. i. p. 87 (1883); Saunders, Man. Br. B. p. 319 (1889); Lilford, Col. Fig. Brit. B. parts xiii. xvi. (1890).

(*Plate XLVI.*)

Adult Male.—General colour above brown, with a tinge of sandy-colour on the neck and wing-coverts, many of the feathers being edged with pale brown or ashy-grey; head and sides of face with a decided tinge of ashy-grey, the ear-coverts browner; the median and greater wing-coverts glossy brown, with whity-brown margins; quills black, with brown shafts, the primaries externally shaded with ashy, the secondaries like the back, but darker brown towards their tips; lower back and rump dark brown; long upper tail-coverts white, slightly varied with brown at the base and at the tips; *tail pure white;* under surface of body brown, the throat and chest whity-brown, with dark brown central streaks, some of the feathers shaded with ashy; under wing-coverts and inner lining of quills dark brown, the latter inclining to ashy; cere and bill yellow; feet yellow, the claws black; iris straw-yellow. Total length, 33·5 inches; culmen, 3·0; wing, 24·5; tail, 11·0; tarsus, 4·1.

Adult Female.—Similar to the male, but larger. Total length, 38 inches; culmen, 3·8; wing, 26·3; tail, 13·5; tarsus, 4·6.

Young Birds.—The young are much darker than the adults, and much more mottled, the head and neck being blackish-brown, the long feathers slightly tipped with fulvous-brown, not so distinctly on the crown itself; entire back, scapulars, and median wing-coverts bright fulvous-brown, with large markings of dark brown towards the tips, imparting a strongly mottled appearance to the upper surface of the body; lesser and greater wing-coverts dark brown, the latter slightly mottled with whity-brown, as also the inner secondaries, the quills being otherwise as in the adults; lower back, rump, and upper tail-coverts light brown, the long coverts mottled with whity-brown; tail of the latter colour, the centre feathers especially whitish, all irregularly mottled with greyish-brown, which colour is most developed on the edge of the feathers; throat dark brown, with white bases to the feathers, the sides of the face being almost uniform dark brown; rest of under surface of body mottled like the back, the bases of the feathers being fulvous-brown, mottled with dark brown down the centre and at the tip; under tail-coverts and thighs rather more uniform; under wing-coverts entirely dark brown; cere yellowish-brown; bill black; feet yellow; iris brown.

Characters.—I have already stated that the unfeathered legs of the White-tailed Eagle unfailingly distinguish it from the Golden Eagle. The pure white tail of the adult is a further character, and the mottled plumage and whitish tail of the young birds ought to render identification of immature specimens easy. Indeed it is only by gross carelessness that the two species can be confounded, and yet we know that this is often the case.

Range in the British Islands.—Principally observed in England as a migrant in autumn and winter, though it formerly bred on many parts of the coast and in the Lake district, but even in the south of Scotland it has become extinct as a breeding bird, and places like Ailsa Craig, where there used to be an eyrie, no longer know the species except as a chance visitor. In the western isles of Scotland it still breeds, and also on the northern coast. Mr. Ussher says that in its former breeding-haunts in Donegal, Antrim, Dublin, Wicklow, Cork, Clare, and Galway it is extinct; but a pair has bred recently on the coast of Mayo, and another pair on the coast of Kerry.

Range outside the British Islands.—The White-tailed Eagle is found in most parts of Northern Europe, and breeds in Scandinavia, Germany, and Russia, as well as in the valley of the Danube. Eastwards it extends across Asia to Kamtchatka, and in winter the species is found to the southward in China and Japan, and even visits India.

In North America its place is taken by the Bald Eagle (*Haliaëtus leucocephalus*), but the European species extends to Greenland, where it is resident.

Habits.—By many writers this species is spoken of as the Sea-Eagle, and in most of its range it appears to frequent the sea-coast, but it is also found on inland waters and lakes, and is probably nowhere more plentiful in Europe than in the valley of the Danube. The food of the White-tailed Eagle consists of the smaller game, such as hares, young deer, and ducks, and it also feeds largely on carrion. It will likewise catch fish, and in Pomerania Mr. Seebohm says that it often makes considerable havoc in the carp-ponds. Its nature is said to be somewhat cowardly, and one of these Eagles will allow itself to be driven off by a Peregrine or a pair of Ravens.

Nest.—This is a huge structure of sticks, added to year by year, until it attains an immense size. It is often built on a rock in the middle of a lake in inland districts, but the site varies a good deal, and the nest is as often built in a tree, and on rarer occasions on the ground. In Egypt the nest has been found among reed-beds, and similar instances have been recorded from Europe. It is, however, often placed on the ledges of cliffs, and is composed entirely of sticks and a little heather, with some coarse grass as lining.

Eggs.—Two in number; white or whity-brown, when they have become nest-stained. The brownish markings which are sometimes seen on them are apparently always the result of such staining. The eggs are somewhat smaller than those of the Golden Eagle, and are rounder in form, and coarser in texture. Axis, 2·7–3·15; diam., 2·2–2·5.

We now pass on to the Kites, whose connection with the Eagles is maintained by such forms as the Brahminy-Kites (*Haliastur*) of India and Australia, which approach the Sea-Eagles in form, but have the manners of a Kite. In Africa, and again in North America, occur the Swallow-tailed Kites, of which Riocour's Kite (*Nauclerus riocouri*) is the representative in the former continent, its place being taken in the New World by the following.

THE PIED SWALLOW-TAILED KITES. GENUS ELANOIDES.

Elanoides, Vieillot, N. Dict. d'Hist. Nat. xxiv. p. 101 (1818). Type, *E. furcatus* (L.).

These birds, like the Eagles, have the feet bare, but they are much weaker than in the last named group, and have not such powerful talons. The nostril is oblique, and is generally closed in by a membrane on its upper margin, so that the nasal aperture becomes almost linear in character. The tail is very long and distinctly forked, the outer tail-feather being the longest. The wing is also of great length and even exceeds the tail in dimensions.

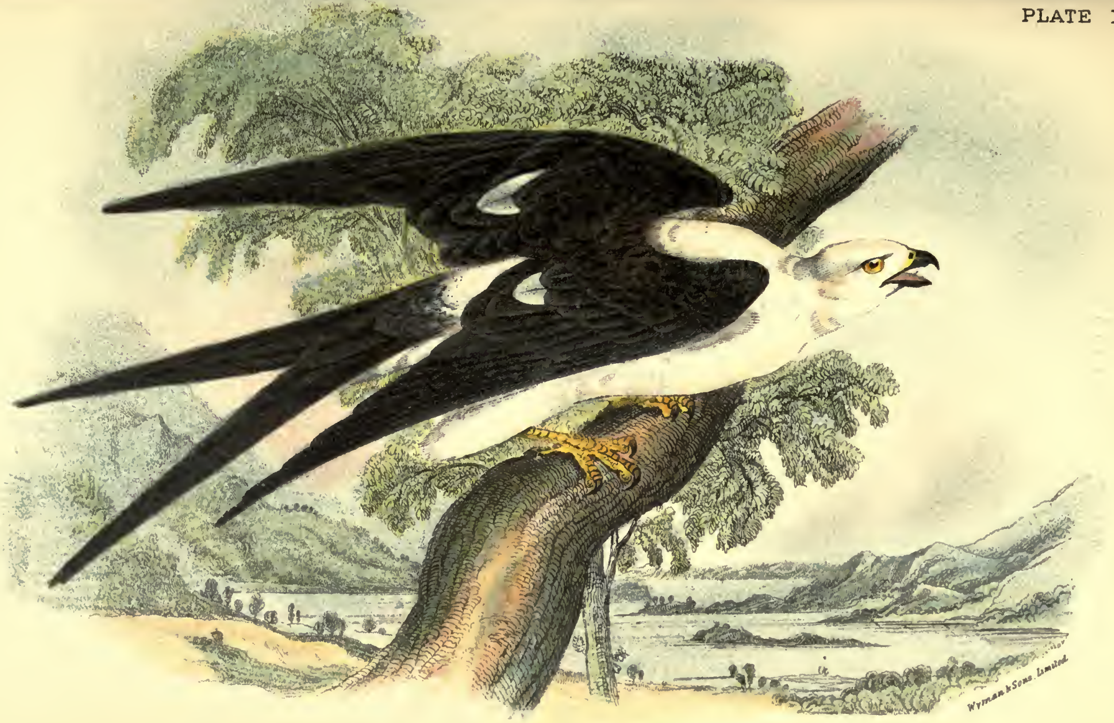
I. THE SWALLOW-TAILED KITE. ELANOIDES FURCATUS.

Falco furcatus, Linn. Syst. Nat. i. p. 129 (1766).
Nauclerus furcatus, Macg. Brit. B. iii. p. 277 (1840); Newton, ed. Yarr. Br. B. i. p. 103 (1871); B. O. U. List Brit. B. p. 100 (1883).
Elanoides furcatus, Sharpe, Cat. B. Brit. Mus. i. p. 317 (1874); Seebohm Br. B. i. p. 63 (1883); Saunders, Man. Brit. B. p. 328, note (1889).

(*Plate XLVII.*)

Adult Male.—General colour above black, varied with shades of purple or green, according to the light; mantle and lesser wing-coverts deep velvety-black; wings and tail externally light slaty-grey, with a slight gloss of purple or bronzy-green, the latter tint especially developed on the two centre tail-feathers; head and neck all round white, as well as the hinder part of the back and rump; the entire under surface of the body pure white; upper wing-coverts white at the base, shaded with grey, and glossed with green; under wing-coverts and bases of inner secondaries white; bill dark horn-blue; feet light milk-blue; iris rich dark reddish-brown. Total length, 21 inches; culmen, 1·0; wing, 17·0; tail, 13·0; tarsus, 1·4.

PLATE XLVII.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SWALLOW-TAILED KITE.

Adult Female.—Similar to the male. Total length, 24 inches; wing, 16·8.

Range in Great Britain.—The Swallow-tailed Kite is so firmly established in the British list of birds, that to omit it would seem to be a mistake, and yet the claims of the species to be considered British are of the very slenderest. Two specimens have been recorded: one in Argyllshire in 1772, and another in 1823. The latter bird was captured alive, but made its escape, so that I believe I am correct in saying that no authentic British example of the Swallow-tailed Kite exists in any private collection or public museum in this country.

Range outside the British Islands.—The range of this species in North America is given by Mr. Ridgway as extending over the tropical and warm-temperate portions of continental America, north in the interior regularly to Iowa, Minnesota, Illinois, &c., along the Atlantic coast casually to Pennsylvania and Southern New England. In winter the species migrates to Brazil.

Habits.—A very graceful bird on the wing, soaring to a great height. It appears from Audubon's notes, to be gregarious to a great extent, feeding on the wing, and catching insects or small lizards from the trunks of the trees, devouring also large grasshoppers, caterpillars, snakes, and frogs. Mr. Dresser also says that they feed on wasp-grubs, and will carry off a nest to a perch and there pick out the grubs.

Nest.—Placed on a high tree, made of sticks, and lined with coarse grass. Mr. Dresser suggests that they probably breed in society, and Mr. Ridgway says that the nest is usually found near watercourses.

Eggs.—Two or three in number; white or buffy-white, boldly spotted or blotched, chiefly round the larger end, with hazel-brown, chestnut, or rich madder-brown (*Ridgway*).

THE TRUE KITES. GENUS MILVUS.

Milvus, Cuvier, Leç. Anat. Comp. i. tabl. Ois. (1800).
Type, *Milvus milvus* (L.).

The Kites have the same oblique nostril as was described in the genus *Elanoides*, with the membrane on the upper margin closing in the nostril, so that the nasal opening appears as a linear slit. The tail is forked, so that the outer feathers are the longest, and the wings are long and pointed, but the difference between the tips of the primaries and secondaries is more than that of the fork of the tail.

The True Kites are birds of the Old World, and are distributed over temperate Europe, as well as Asia, Africa, and Australia.

I. THE COMMON, OR RED KITE. MILVUS MILVUS.

Falco milvus, Linn. Syst. Nat. i. p. 126 (1766).

Milvus regalis, Roux; Macg. Brit. B. iii. p. 265 (1840); Seebohm, Br. B. i. p. 74 (1883); Lilford, Col. Fig. Brit. B. part xi. (1889).

Milvus ictinus, Sav.; Newt. ed. Yarr. Brit. B. i. p. 92 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 319 (1874); Dresser, B. Eur. v. p. 643, pl. 361 (1875); B. O. U. List Br. B. p. 99 (1883); Saunders, Man. Br. B. p. 325 (1889).

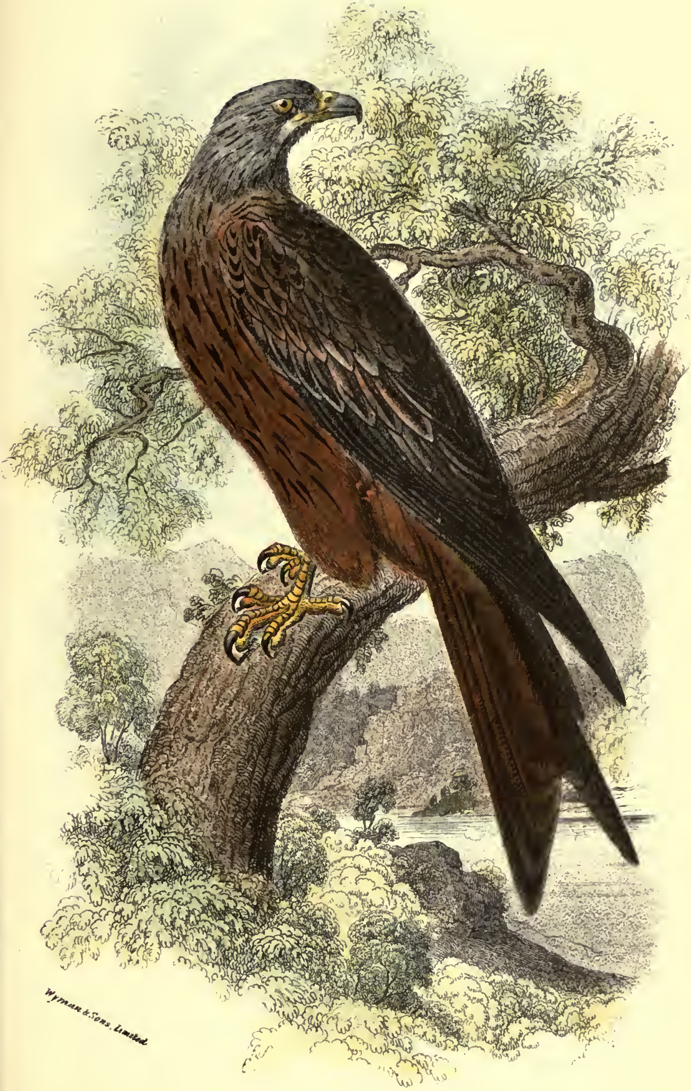
(*Plate XLVIII.*)

Adult Male.—Above brown, with rufous margins to the feathers, shading off into buff on the edges, especially on the wing-coverts; primary-coverts and primary-quills black, with the base of the inner web white; the secondaries paler brown, with rufous edges; the lower back and rump dark brown; upper tail-coverts rufous, washed with brown; tail rufous, with fulvous tips to the feathers, the outer feathers darker brown on the outer web, especially towards the tips, the inner web with a few bars of dark brown; head, sides of face, and throat whitish, streaked with dark brown, more narrowly on the latter; chest pale rufous, the feathers margined with buff, and with broad brown centres; remainder of under surface of body bright rufous, with longitudinal centres of dark brown, these streaks more narrow on the thighs and under tail-coverts; under wing-coverts and axillaries dark brown, with rufous margins, the lower series greyish; cere yellow; bill horn-colour; feet yellow; iris yellow. Total length, 24 inches; culmen, 1·8; wing, 20·4; tail, 15·0; tarsus, 2·2.

Adult Female.—Similar to the male. Total length, 24 inches; wing, 18·6.

Young Birds are distinguished by the light streaks on the under

PLATE XLVIII.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KITE.

surface of the body, and the much narrower black stripes on the under-parts.

Range in Great Britain.—Formerly a common species in many parts of England and Wales, but now extinct in most of its former haunts, though it is said still to nest in certain places in the last-named principality, where it is protected. In Scotland, also, it occasionally breeds, but in England the last nest recorded was in 1870 in Lincolnshire. There are still living people who can remember the Kite as anything but a rare bird, and the Marquis of Huntly's head keeper at Aboyne could recall the time when it bred regularly at Glentanar, and was always known as the "Glentanar Glead." In Ireland it appears never to have been plentiful, and only some half-a-dozen instances of its capture have been recorded. In the Middle Ages it was a common species in England, and excited the curiosity of foreign visitors by its abundance in the streets of London, where it fed upon the offal and garbage.

Range outside the British Islands.—Throughout the greater part of Europe the Kite is met with, and breeds in Central Europe and the Mediterranean countries, remaining in Southern Spain at all seasons, though the number is slightly increased by arrivals from the north in winter, when they pass over to North Africa during the autumn migration. Its northern range in Scandinavia is about 61° N. lat., and its eastern range in Russia is bounded by the Dnieper and the Governments of Tula and Orel. It breeds in Palestine, in North Africa, and is also found in Madeira, the Canaries, and the Cape Verd Islands.

Habits.—However much the Red Kite may have frequented the cities of England in former times, as its relations do many of the eastern cities at the present day, the species is now banished from the woods which it still frequented early in the century, and is now only to be found in the wilder parts of Great Britain. In many of the woodland districts of Northern Germany, however, it is still a common bird, and Mr. Seebohm gives an account of a bird-nesting excursion in Pomerania, when he took several nests.

The flight of the Red Kite is easy and graceful, and the forked tail of the bird renders it readily recognisable on the wing. Its well-known powers of soaring used, in former days, to make it an object of pursuit for Falconers, and it is said that on some occasions both the Kite and its pursuer soared to such an immense height as to become invisible, and neither Falcon nor quarry were ever seen again. The cry of the Kite is like that of its tropical brethren, a "mewing" one, but it is not heard in the same constant and irritating querulous manner, as is the case with the Govinda Kites in India, or the Egyptian Kites in Egypt. With the Red Kite the cry is principally heard in the breeding-season.

In most of its ways the Red Kite is very Buzzard-like, and like that species, it captures its prey more by surprise and stealth than in open flight. Its diet is varied, consisting of the smaller mammals, birds, reptiles, and frogs, and also fish, but the remains of hares which have been found in the nest of the Kite are probably those of animals killed by some more powerful depredator, and carried off by the Kite after the animal has been despatched and partially eaten by its original captor. The same may be said of the Grouse, which the Kite is stated to snatch on occasion, for one can hardly imagine a weak-footed bird like the Kite capturing a powerful bird like the Red Grouse, if the latter were in its full strength; and it is, therefore, most likely that only diseased or wounded birds fall victims to the Kite's rapacity. Besides being a scavenger, it will also take young birds of all sorts, and in the old days, when the species was common, it obtained a bad name as a destroyer of young chickens.

Nest.—From all accounts this is chiefly remarkable among the nests of the Birds of Prey for the scraps with which it is ornamented. It is generally placed in a tree, though in certain places it has been found on rocks, as in Northern Africa, for instance. As to the rubbish with which a Kite decorates its nest of sticks, here are some of the items recorded by Mr. Seebohm as found by him in those he visited in Pomerania: "old rags, parts of newspapers, a piece of embroidery, part of an old stocking, some moss, goat's hair, rags, lumps of hair from a cushion, brown paper, wool, pig's hair, &c."

Eggs.—From two to three in number; pale greenish-white or white, many of them with spots and blotches of reddish-brown or chestnut, some of the eggs being very boldly blotched, and with the markings almost black. The red blotches are not confined to either end of the egg, as a rule, though sometimes this is the case. The spots are generally distributed over the egg, when they occur, and serve to bring into relief the larger and darker blotches, which give the eggs a very handsome appearance. Axis, 2·1–2·35 inches; diam., 1·7–1·75.

II. THE BLACK KITE. MILVUS MIGRANS.*

Accipiter korschun, Gm. N. Comm. Petrop. xv. p. 444 (1771).
Falco migrans, Bodd. Tabl. Pl. Enl. p. 28 (1783).
Milvus migrans, Newton, ed. Yarr. Brit. B. i. p. 97 (1871); Dresser, B. Eur. v. p. 651, pl. 362 (1876); B. O. U. List Br. B. p. 99 (1883); Saunders, Man. Brit. B. p. 327 (1889); Lilford, Col. Fig. Brit. B. part xix. (1891).
Milvus korschun, Sharpe, Cat. B. Brit. Mus. i. p. 322 (1874).
Milvus ater, Seebohm, Brit. B. i. p. 80 (1883).

Adult Male.—General colour above dark brown, the median wing-coverts paler brown, with darker brown shaft-stripes; quills dark brown, paler on their inner webs, ashy-brown below, paler towards the base; tail dark brown, somewhat rufescent towards the end, with very indistinct bars of darker brown; head all round and throat whitish, with dark brown streaks, the ear-coverts washed with brown; under surface of body rufous-brown, becoming clearer rufous on the abdomen, the breast broadly streaked with dark brown, more narrowly on the abdomen, flanks, and under tail-coverts; under wing-coverts dull brown, washed with rufous and streaked with dark brown, the lower series ashy-brown; cere and gape orange; bill black, yellowish at base; feet yellow, claws black; iris pale greyish-yellow, surrounded by a black line. Total length, 22 inches; culmen, 1·6; wing, 18·1; tail, 11·0; tarsus, 2·2.

Adult Female.— Similar to the male in plumage. Total length, 22 inches; wing, 18·0.

Range in Great Britain.—This Kite can only be considered as one of our rarest and most accidental visitors, for it has only been known to occur in the British Islands on one occasion, an adult male bird having been trapped in the deer-park at Alnwick in Northumberland in May, 1866. This specimen is now in the Newcastle Museum.

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* Though I still believe that the oldest name for this species is *Milvus korschun* (Gm.), the name is a barbarous one, and as it has no similarity to anything Latin or Greek, I am willing to discard it for the more classical one of *M. migrans*, which has been generally adopted for the Black Kite by ornithologists of the present day.

Range outside the British Islands.—This Kite is found in most parts of Europe, though locally distributed in many portions of the Continent. On both sides of the Mediterranean Sea it is to a great extent resident and breeds, especially in Northern Africa, but, though nesting throughout Central Europe, it does not extend to Scandinavia, being again found throughout Russia from Finland and Archangel to the Caspian Sea. Its range extends eastward to Persia and Turkestan, but farther east its place is taken by *Milvus govinda* and *M. melanotis*. In winter it visits Africa, wandering even to the southern portions of the continent.

Habits.—Although very similar in its ways of life to the Red Kite, the present species seems to be a much shyer bird than its congener in Northern Europe, though in Southern Europe and the Mediterranean countries it is much commoner and is even found in some of the cities, which it frequents for the sake of the garbage it can pick up. It is particularly fond of fish, and is often to be seen beating over lakes and rivers in pursuit of fish on the surface or in the shallows. Its food likewise consists of leverets, rats, mice and small birds, frogs, and insects. Although mostly found in forests and wooded districts, the Black Kite is sometimes met with in unexpected localities, and Mr. Dixon states that, when in Algeria, he found the Black Kite "in the most desolate country, both on the plains and at altitudes of 7,000 feet in the Aures Mountains." In Mr. Seebohm's work on British Birds occurs the following note, translated from the writings of the late Professor Bogdanow. "Upon my arrival at Astrachan, I was greatly surprised at the numbers of Black Kites living in the town, and at their tameness. One could throw hardly anything out of the window, without two or three of these birds pouncing on it. As soon as the August fishery commences, all these birds leave the town and go to the fishing-places, where the small and useless fish are cast away by the fishermen. The different localities inhabited by the Kite, and its occurrence in the steppes and valleys, certainly does not make it a normal inhabitant of the plains, and its real habitation is the forest, where it breeds, and to which it retires to roost. In the Volga district it never builds anywhere but in trees; but in the Volga delta, where no oaks nor any other high trees exist, it constructs its nest on the very low trees which sometimes grow amidst reeds. In the wooded parts of Kazan their food consists of young hares, moles, mice, and small birds, and in the towns and villages of garbage. In the river-valleys it preys upon frogs, water-rats, ducks and other water-birds; but in no case, and in no place, does it despise carrion. Its migration from the province of Kazan commences in September, and draws to a close in October. This, however, largely depends upon the weather, as in dry and mild autumns, when there are many mammals on the steppe, it leaves later."

Nest.—Made of sticks, and lined with some rubbish and scraps of paper, bits of old clothes and rags, as in the case of the Red Kite. In the Eastern Atlas, Mr. Osbert Salvin states that the nest was usually built amongst the roots of a tree growing out of a rock. Mr. Seebohm adds: "The nest is often covered with fish-bones, and, according to Dr. Holland, the young are fed on reptiles and small birds. The Black Kite will also rob the nests of other birds, when it is bringing up its young." In Southern Spain, Mr. Howard Saunders has found the species to be gregarious during the nesting-season, and as many as ten nests have been found by him in a small patch of forest.

Eggs.—Generally two, but as many as five are sometimes found. They are very similar to those of the Red Kite, but they are, as a rule, more distinctly marked than the eggs of the last-named species. The ground-colour is dull white, and the reddish blotches are distributed irregularly over the egg, being sometimes congregated at one end, sometimes at the other. Some eggs are clouded all over with pale cinnamon-brown. Axis, 2·05–2·3 inches; diam., 1·6–1·75.

THE BLACK-SHOULDERED KITES. GENUS ELANUS.

Elanus, Savigny, Syst. Ois. d'Egypte, p. 274 (1809).

These are perfectly tropical birds, and, like the Bee-Eaters, are entirely out of place in Great Britain. As, however, the occurrence of the common Black-winged Kite in Ireland appears to be beyond question, it is given a place in the present work, for what it is worth. Like all Kites, the members of the genus *Elanus* have the feet bare, and further show that they are Kites and not Eagles by having the oblique nostril which is one of the features of the Milvine section of the Sub-family *Aquilinæ*. At the same time they approach the True Falcons in appearance, and more especially the Honey-Kites in their soft feathering, that peculiar "feel" of plumage which distinguishes this small group of Hawks to the student, and enables him to recognise the Falconine Kites. To this group of Accipitrine Birds belong the South America genera *Rosthramus* and *Leptodon*, as well as *Gampsonyx*, and the Old World genera *Gypoictinia*, *Elanus*, *Henicopernis*, *Machærhamphus*, and *Pernis*. Of these Falconine Kites perhaps the most interesting is *Machærhamphus*, of which the species are so rare in museums that certainly less than twenty examples are as yet known. They are crepuscular birds, coming out in the twilight and feeding on bats, edible swifts, and other night-flying animals. These curious black Perns are found in Southern and Eastern Africa and Madagascar, and then the genus re-appears in Southern Tenasserim, Malacca, Borneo, and New Guinea. The genus *Elanus* is represented in every portion of the tropical globe, and is absent only in the temperate parts of the Palæarctic and the Nearctic Regions, as well as in Oceania.

I. THE BLACK-SHOULDERED KITE. ELANUS CÆRULEUS.

Falco cæruleus, Desf. Mem. Acad. Sci. Paris, 1787, p. 503, pl. 15.

Elanus cæruleus, Leach; Sharpe, Cat. B. Brit. Mus. i. p. 336 (1874); Dresser, B. Eur. v. p. 663, pl. 363 (1875); B. O. U. List Br. B. p. 100 (1883); Saunders, Man. Brit. B. p. 328, note (1889).

Adult Male.—General colour above blue-grey, the head paler; forehead and eyebrow, lores and sides of face, white; the ear-coverts washed with grey; feathers round the eye black; lesser and median wing-coverts black, the greater series blue-grey;

primary-coverts and quills grey, the latter white at the base, the shafts black; the inner quills paler and the inner secondaries darker grey, like the back; tail ashy-white, with the two centre feathers more ashy-grey; under surface of body pure white, including the under wing-coverts and axillaries; cere, orbits, and feet yellow; bill black; iris carmine. Total length, 13·2 inches; culmen, 1·05; wing, 10·6; tail, 5·6; tarsus, 1·4.

Adult Female.—Similar to the male. Total length, 12·5 inches; wing, 10·2.

Young Birds.—These differ somewhat from the adults, being ashy-brown, *with broad ashy-white tips to the feathers;* tail also ashy-brown, whiter on the inner web; wing-coverts black, as in the adults, with buffy-white tips; forehead and eyebrow white, with narrow rufous-brown streaks; sides of face and under surface of body silky-white, the centre of the breast streaked with rufous, as also the flanks; the sides of the breast washed with rufous; iris light brownish-yellow, or pale salmon-colour.

Range in Great Britain.—Has only been noticed once in Ireland, a single specimen having occurred "on the bog of Horsestown in Co. Meath in Ireland; it is now in the possession of Sir John Dillon, at Lismullen" (More, List of Irish Birds, 1885, p. 6).

Range outside the British Islands.—The Black-shouldered Kite is found all over tropical Africa and even visits Northern Africa, where it breeds and in some localities is not rare. It crosses into Southern Spain, where, however, it is not common. The same may be said of its occurrences in South-eastern Europe. It is found also in the Indian Peninsula.

Habits.—Colonel Irby says that this species is easily recognised on the wing by its greyish-white colour. It has also a peculiar habit of hovering at about thirty yards from the ground, with the wings forming a sort of V or acute angle with the body, never bringing them level with one another, till it flies off to take up a fresh position. The birds are rather wary when thus engaged in hunting for their prey. In India, Mr. A. O. Hume states that it is nowhere seen in any numbers, though he once saw more than a dozen pairs hunting over the dry reedy bed of a jheel in the Delhi district; they feed mostly on large grasshoppers, but also catch mice. In Egypt, Mr. Stafford Allen says that the bird is crepuscular in its habits, feeding largely on mice and beetles, as well as small birds.

Mr. Hume likewise speaks of the curious hovering flight of the Black-shouldered Kite. He says :—" They hover over the grass in the fashion of a Kestrel, or perhaps more like a Snake-Eagle (*Circaëtus gallicus*), but in a clumsier and heavier manner. The wings point upwards, instead of being retained nearly horizontally as in the Kestrel, and the legs and tail hang down in a manner unlike that of any other bird I have yet noticed. Thus hovering, they after a time slowly descend, and when within a few feet of the ground, generally drop suddenly. They are very tame, bold birds, passing unconcernedly within a few yards of a sportsman, when busy hunting, over fields of grass, and sitting composedly on the bare end of a bough, whilst, gun in hand, one walks up to within a few paces of their perch."

Nest.—Composed of sticks and lined with grass roots and fibres, and always built in a tree.

Eggs.—Three or four, generally the latter number, on rare occasions five. Ground-colour yellowish-white or buffy-white, the markings varying considerably. Very few but what are richly marked with chestnut; one egg in the Hume collection, from Poona, being white, sparsely powdered with reddish spots. In some the red colour is congregated at one or other end of the egg, leaving the other half with spots only, while in some very handsome specimens the whole of the egg is clouded with reddish-brown and chestnut, leaving the white ground-colour invisible. Axis, 1·55–1·7 inch; diam., 1·2–1·25.

THE HONEY-KITES. GENUS PERNIS.

Pernis, Cuvier, Règne Anim. i. p. 322 (1817).

Type, *P. apivorus* (L.).

The Honey-Kites, or Perns, generally but erroneously called Honey-" Buzzards " in works on Natural History, are birds of the Old World only, their place in North and South America being taken by the Grey Kite-Falcons (*Ictinia*), and in the

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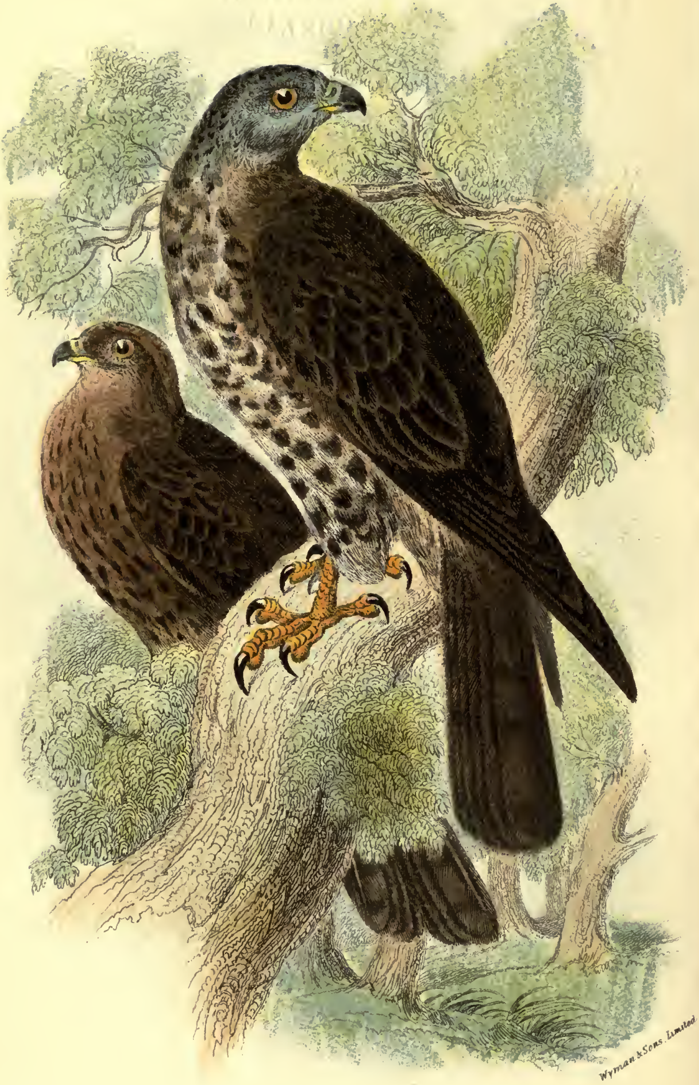
PLATE XL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HONEY KITE.

Neotropical Region especially by the Double-toothed Kite-Falcons (*Harpagus*).

The Honey-Kites are found throughout temperate Europe and Asia as far as Japan, and occur throughout the whole of India, Ceylon, the Malay countries and islands, and China. They visit Africa only on migration, and are unknown in the Australian Region.

The members of this genus have the lores densely feathered, and the plumes of the face are very short and scaly in appearance, the feet are weak, and the toes are not suited for killing prey in full flight. The nostril is an oblique oval of a somewhat irregular shape. The wings are long, and the tail is rounded as in *Elanus*. There is a peculiar softness about the plumage of these Honey-Kites, which is shared by the members of the genera *Baza*, *Henicopernis*, and *Harpagus*, and shows that these Birds of Prey are related to each other, forming, in fact, links between the True Kites and the True Falcons.

I. THE HONEY-KITE. PERNIS APIVORUS.

Falco apivorus, Linn. Syst. Nat. i. p. 130 (1766).

Pernis apivorus, Macg. Brit. B. iii. p. 254 (1840); Newton, ed. Yarr. Brit. B. i. p. 121 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 344 (1874); Dresser, B. Eur. vi. p. 3, pls. 365, 366 (1875); Seeb. Brit. B. i. p. 69 (1883); B. O. U. List Brit. B. p. 100 (1883); Saunders, Man. Brit. B. p. 328 (1889); Lilford, Col. Fig. Brit. B. part xxvii. (1893).

(*Plate XLIX.*)

Adult Male.—General colour above brown, with slightly paler margins to the feathers, which are black-shafted; on the nape a spot of white, caused by the white bases to the feathers; greater coverts and quills darker brown at their ends, externally shaded with grey, and having two broad bars at the base, which is whitish below; the inner webs, particularly of the secondaries, with slight greyish frecklings; upper tail-coverts rather paler brown than the back, barred with white near the base, and having obsolete white tips; tail pale brown, narrowly tipped with whitish, the base also mottled with white; the tail-feathers crossed with three bands, one near the base rather paler brown, one in the middle and one just before the tip of the tail darker brown, the sub-terminal one very broad; head grey, this colour extending on to the sides of the neck; under surface of body white, narrowly streaked with brown, these streaks widening out into a spade-shaped spot on the sides of the breast; flanks and abdomen also spotted with brown; under wing-coverts also brown, the inner ones and the axillaries white, with a few brown spots or bars, the lower series white with broad blackish bars; cere grey; bill black; iris straw-colour. Total length, 25·5 inches; culmen, 1·4; wing, 17·2; tail, 11·0; tarsus, 2·0.

Adult Female.—Similar to the male in colour. Total length, 23 inches; wing, 16·6.

Young Bird.—Distinguished by its brown head and face, and by the markings on the tail, which, besides the two brown bands (one median and one sub-terminal), has the basal part varied with six or seven broken bars or mottlings. The under surface of the body is dull rufous-brown, with very distinct black shaft-stripes, the under tail-coverts and some of the breast-feathers paler and more buff at their bases; the head and hind-neck spotted with buff, the feathers having their points of this colour; forehead and eyebrow white, and the wing-coverts also tipped with white.

As the young birds progress to maturity the under surface becomes barred with white.

Melanism.—The Honey-Kite, both in its young and adult plumage, is very subject to melanism, and examples are often shot which are entirely brownish-black.

Range in Great Britain.—The present species used to breed in many parts of England, arriving in early summer to nest in the wooded districts, but the beauty of its eggs and the rarity of the bird have caused its destruction in this country, and of late years I have not heard of any being taken in the New Forest, which may be regarded as the last stronghold of the Honey-Kite in England. In Ireland it appears to be a very rare visitor, and the same may be said of Scotland, in parts of which the species used to breed. In autumn a few examples are procured at the time of the southward migration, and it has been stated to occur in winter occasionally.

Range outside the British Islands.—The Honey-Kite returns from its winter home in Africa in May, and passes over the Straits of Gibraltar in large numbers, more than a hundred being often seen together. In September it passes south again, but in less numbers and in smaller parties; a similar stream of migration passes over the Bosphorus. The breeding-range of the species seems to extend throughout the greater part of Europe to Southern Norway, and it nests in Sweden, Finland, and Russia up to the Arctic Circle. It is probably this same species which extends eastward to Turkestan, and Mr. Seebohm states that he has received a specimen from Krasnoyarsk in Central Siberia. He also believes that it extends through Eastern Siberia to Japan and China, but it will probably be found to be the eastern race, *P. ptilonorhynchus*, which has a slight crest, which will prove to be the dominant species of Eastern Asia. The last-named form breeds in India and occurs throughout the Burmese and Malayan countries, while in Java, and probably in Sumatra and Borneo, its place is taken by a resident form which is very dark and has almost as long a crest as a Crested Eagle (*Spizaëtus*).

Habits.—In the northern part of its range the Honey-Kite is a late arrival, not, as pointed out by Mr. Seebohm, so much on account of its fearing the cold, as because the insects which form its favourite food do not make their appearance until the middle of the summer. The Honey-Kite feeds largely on wasps, bees, and their larvæ, which it extracts from the comb, but it also devours other insects, as well as small birds and mice, slugs and worms, and is even said by Mr. Sachse to eat berries and small fruits in autumn, when animal food fails. The nature of its food renders the Honey-Kite somewhat of a ground-bird, and it is said to run with comparative agility.

Nest.—As a rule the deserted nest of some other bird is utilised by the Honey-Kite, being repaired and added to with fresh twigs. Both sexes assist in the incubation of the eggs, the sitting-bird being fed meanwhile by its mate.

Eggs.—These are laid in June, and are mostly two in number, very rarely three, but even four have been known to occur. The eggs are among the handsomest of those of Accipitrine Birds, and are mostly richly clouded with two shades of rufous, the overlying blotches being of the deepest chestnut, in fact almost black. Some eggs are entirely clouded over with lighter chestnut, while in others the buffy-white ground-colour is conspicuous, and half of the egg is spotted with chestnut, with blotches and cloudings round the larger end, and sometimes quite half the egg is clouded and blotched, while the other half is only sparsely spotted. Axis, 1·9–2·2 inches; diam., 1·6–1·75.

THE TRUE FALCONS. SUB-FAMILY FALCONINÆ.

The Falcons have the tarsus reticulated and covered with a network of scales both in front and behind. They are also distinguished by having a distinct notch or tooth in the bill. The outer toe is connected to the inner toe by a membrane near the base, and the tibia is considerably longer than the tarsus, imparting a great strength to the leg, which is evidenced by the way in which these birds strike down their prey in full flight. As with all the other Sub-families of the Birds of Prey, species of various form are included, from the feeble Kite-like Cuckoo-Falcons on the one hand, to the dashing Peregrines on the other. Included in this Sub-family are the tiniest of all the Hawks, viz., the Pigmy Falcons or Falconets (*Microhierax*), birds which do not exceed the size of a Butcher-bird in bulk, feed on insects, and lay white eggs in the hole of a tree. These little Falconets inhabit the Himalayas, the Burmese countries to Southern China, as well as the Malayan Peninsula and the Indo-Malayan islands.

THE FALCONS. GENUS FALCO.

Falco, Linn. Syst. Nat. i. p. 124 (1766).

Type, *F. peregrinus*, Tunst.

All the Falcons have a distinct tubercle, or pedestal, in the centre of their nostrils, which are round. The foot is powerful, and the talons curved and very sharp, the outer toe longer than the inner toe. The wings are very pointed, and the primaries far exceed the secondaries in length.

The Falcons are found in nearly every part of the world.

I. THE PEREGRINE FALCON. FALCO PEREGRINUS.

Falco peregrinus, Tunst. Orn. Brit. p. 1 (1771); Macg. Br. B. iii. p. 294 (1840); Newton, ed. Yarr. Brit. B. i. p. 53 (1871); Dresser, B. Eur. vi. p. 31, pl. 372 (1876); Seebohm, Brit. B. i. p. 33 (1883); B. O. U. List Br. B. p. 102 (1883); Saunders, Man. Br. B. p. 334 (1889); Lilford, Col. Fig. Br. B. part xii. (1890).

Falco communis, Gm.; Sharpe, Cat. B. Brit. Mus. i. p. 376 (1874).

Adult Male.—General colour above blue-grey, much paler towards the rump and upper tail-coverts, the upper surface barred with black, the bars on the rump and upper tail-coverts more or less heart-shaped; the head, neck, and upper mantle blackish, with grey bars, more or less indistinct on the mantle; cheeks, ear-coverts, and a moustachial band blackish; forehead whitish; sides of neck white, forming a patch of white, separating the ear-coverts from the hind-neck; under surface of body white, with a tinge of pale fawn-colour on the breast and lower abdomen; the throat unspotted, and the chest with a few narrow bars of blackish, taking the form of spots in the centre of the breast, and of narrow dart-shaped lines on the under tail-coverts; the quills brownish-black, the primaries slightly shaded with greyish, the secondaries clearer grey, crossed by dull blackish bars, the smaller median quills tipped with white; tail-feathers grey, broadly barred with black and tipped with white, the bars more obscure towards the tip of the tail, which is darker than the basal portion; cere and eyelids yellow; bill blue, blackish towards the tip; feet yellow, the claws black; iris dark hazel-brown. Total length, 15 inches; culmen, 1·2; wing, 12·0–12·7; tail, 6·5; tarsus, 2·05.

Adult Female.—Larger than the male. Total length, 17 inches; culmen, 1·35; wing, 14·5; tail, 7·5; tarsus, 2·3.

Young Birds.—Brown, shaded with grey on the upper surface, the feathers of which are edged with rufous; head and neck rusty-buff, the sides of the crown and occiput, the nape and hind-neck, the feathers behind the eye, and the moustachial line mottled with blackish; under surface of the body rusty-buff, with mesial longitudinal spots of dark brown, fewer on the thighs, and represented by bars on the under wing- and tail-coverts.

The full-grown young birds may always be told by the rufous margins to the feathers of the upper surface, which become whitish on the upper tail-coverts and tail-feathers, the latter spotted on the outer web and barred on the inner one with pale rufous; the under surface of the body is whitish, the throat unspotted, but all the rest of feathers have longitudinal dark brown centres, the markings on the sides of the body being broader and more dart-shaped; cere, eyelid, and feet bluish-grey.

Range in Great Britain.—The Peregrine breeds on many rocky parts of the coast of England, and in some places there has been a decided increase in the numbers of this noble Bird of Prey, so that on the Dover cliffs and in the Isle of Wight in the south, as well as the cliffs of Wales and the Flamborough head-lands, the Peregrine Falcon is more in evidence than formerly, to the great delight of the ornithologist. Although in many inland parts of England and Wales the species had been exterminated, this was never the case in Scotland, and it breeds both on the cliffs and in the interior, while it also inhabits the rocky islands. In Ireland, according to Mr. R. J. Ussher, the species breeds in numerous places all round the rocky coasts, and in the mountain-cliffs of Tyrone, Fermanagh, Wicklow, Tipperary, Waterford, and Galway.

Range outside the British Islands.—The Peregrine Falcon is found throughout the northern and temperate parts of the Old World, and on its winter migrations visits India and Africa. The North American Peregrine can scarcely be considered to be different from the European bird. In South America, Africa, and Australia dark resident forms of Peregrine are found, all of which may be considered to be distinct races, and in the Mediterranean countries another small race, with black cheeks, also occurs, viz., *F. punicus*. Again, in Java, Sumatra, Borneo, and the Philippines is found a beautifully marked form, of very dark, rich colour, called *F. ernesti*, and the Himalayas have a reddish-breasted form, *F. peregrinator*. All these different races can be recognised by an experienced eye as distinct, but they can never be considered more than races of the ordinary Peregrine, for our European bird varies greatly in the colour of the face, having the sides of the latter sometimes white, and sometimes entirely black, while the amount of rufous on the under surface of the body also varies greatly, being more rufous in some individuals than others. Thus examples from Greenland and those from Egypt are very richly tinted, and it is supposed that the abundance of ducks and other prey has something to do with their finer appearance.

Habits.—From its bold spirit and fiery dash, the Peregrine Falcon has always been considered the best bird for the purposes of Falconry, not only in Europe, but also in the countries of the East.

In a wild state the Peregrine feeds on all kinds of game, rabbits, grouse, partridges, pigeons, and largely on ducks, water-fowl, and sea-birds, and for the sake of the abundance of the latter its eyrie is often found on the rocky cliffs, where Puffins and Guillemots congregate. Sometimes, when bringing food to its young, it will, apparently for mere wantonness, strike down a Gull or Puffin that happens to fly in its path, and send the bird headlong into the sea below. Choughs, Rooks, and Magpies are also captured by the Falcons.

The nesting-place is tenanted year after year, and if one of the birds be shot or trapped, the survivor is not long in finding another mate. The breeding-season commences in April.

Nest.—In this country the nest of the Peregrine Falcon is to be found in high and almost inaccessible cliffs, a mere hollow being formed, without any real attempt at a nest, but in other countries, the old nest of a Rook or Heron, or some other bird, in a tree, is selected, while in the north of Europe the bird nests on the ground in the open. Beyond the *débris* of cast-up pellets, bones of birds and animals, and a few scattered feathers, nothing like a real nest is ever found.

Eggs.—Two or three, and sometimes four in number. The eggs of the Peregrine are richly clouded with some shade of chestnut, over which are some mottlings of darker rufous, often almost black in intensity. Sometimes the colour is uniform light rufous, with cloudings of darker chestnut irregularly distributed over the whole of the egg, accompanied by dots and small or large spots. Occasionally the eggs have a buffy-white ground-colour with reddish-brown blotches. Axis, 1·95–2·2; diam., 1·55–1·6.

II. THE HOBBY. FALCO SUBBUTEO.

Falco subbuteo, Linn. Syst. Nat. i. p. 127 (1766); Macg. Brit. B. iii. p. 309 (1840); Newton, ed. Yarr. Brit. B. i. p. 65 (1871); Dresser, B. Eur. vi. p. 69, pls. 378, 379 (1871); Sharpe, Cat. B. Brit. Mus. i. p. 395 (1874); B. O. U. List Brit. B. p. 102 (1883); Seebohm, Brit. B. i. p. 31 (1883); Lilford, Col. Fig. Br. B. parts ii. iii. (1886); Saunders, Man. p. 337 (1889).

Adult Male.—General colour above dark slaty-grey, inclining to blackish on the head, much clearer on the lower back and rump; wing-coverts like the back; quills blackish, with rufous bars on the inner web; tail slaty-grey, also barred with rufous on the inner web; forehead and eyebrow whitish, the nape tinged with rufous; cheek-stripe, feathers below the eye and along the upper margin of the ear coverts, black; hinder part of cheeks, sides of neck, throat, and entire breast creamy-white, with a rufous tinge, the latter broadly streaked with black down each feather, with a greyish shade on the flanks and vent; thighs, vent, and under tail-coverts rich rusty-red; under wing-coverts buffy-white, with blackish cross-markings; cere, orbits, and feet yellow; bill bluish-black, yellow at base; iris dark brown. Total length, 11·5 inches; culmen, 0·7; wing, 9·6; tail, 5·5; tarsus, 1·25.

Adult Female.—Similar to the male, but larger. Total length, 13·6 inches; culmen, 0·7; wing, 10·6; tail, 6·5; tarsus, 1·4.

Young.—Blackish, with buff edges to the feathers, broader and more distinct on the secondaries, rump, and especially on the crown; forehead and eyebrow buffy-white; cheek-stripe and line under the eye black; sides of neck, nape, and throat rich creamy-buff; under surface of body creamy-buff, the thighs and under tail-coverts more rufous; the breast broadly streaked with black, the thighs more narrowly, the under tail-coverts streaked with a line of black; under wing-coverts rufous, numerously barred with black; quills and tail black, banded with rufous on the inner web, the tail-feathers tipped with rufous.

Characters.—The Hobby in its adult stage is very easily recognised by its uniform rufous thighs, white throat and breast, the latter being striped with black. The young Hobby is more like a young Peregrine, but can, of course, be distinguished by its smaller size.

Range in Great Britain.—A summer visitor to England, where it breeds, when permitted to do so in peace. It has been known to nest in most of the southern and eastern counties, as well as in the midlands, and on rare occasions in Yorkshire. In Scotland it is chiefly known as a rare migrant, but Sir Edward Newton has recorded an instance of the nesting of the species near Dunkeld in 1887. It has never been known to breed in Ireland, though some half-a-dozen occurrences in that island have been chronicled.

Range outside the British Islands.—The Hobby is found from Northern Europe across Siberia to Kamtchatka. It breeds in the forests of Central Europe and Scandinavia, and occasionally in the countries of Southern Europe, but it is principally known in the latter as a spring and autumn migrant. In Northern Europe it extends to the Arctic Circle in Lapland, and in Russia up to 65° N. lat. In winter the species visits China, the Indian Peninsula, and migrates through Eastern Africa as far as the Cape.

Habits.—The Hobby has much the appearance of a diminutive Peregrine, but does not possess the strength or courage of the larger Falcon, though it equals it in fierceness and agility of flight. It feeds largely on insects, especially cockchafers and dragon-flies, and when these are plentiful, it gives up the chase of small birds in a great measure, and lives on insects, which it catches with great dexterity on the wing, devouring them in the air and allowing the wings and wing-cases to fall to the earth. In some of these flights, Taczanowski says that it will occasionally seize a Bat in its career, but drops the latter without touching it further.

are so systematically shot down, that few of them probably reach the mature age when the female assumes a dress like that of her mate. As a rule, the female Merlin is brown, the tail-feathers being also brown, tipped with white, and crossed with five bands of paler brown; the under surface of the body whitish, streaked with dark brown. Total length, 12 inches; culmen, 0·9; wing, 8·8; tail, 5·5; tarsus, 1·5.

Young Birds.—General colour above brown, with a slight shade of ashy-grey, paler on the rump, all the feathers margined with pale sandy-rufous, the secondaries with concealed bars of the same colour; forehead, eyebrow, and ear-coverts whitish, narrowly streaked with black, the latter brownish on the hinder part, which is slightly washed with rufous; throat creamy-white, with narrow and indistinct shaft-lines of brown; remainder of under surface of body whitish, with broad streaks of reddish-brown, the black shaft-stripes very distinct; thighs with smaller brown spots, and the abdomen and under tail-coverts with only a few brown markings; sides of body reddish-brown, marbled with large white spots; under wing-coverts also reddish-brown, with white spots like the sides of the body; quills dark brown, notched on the inner web, and spotted on the outer one with rufous; tail dark brown, tipped with whitish, and barred with pale rufous.

Range in Great Britain.—A resident species in Great Britain, breeding on the mountain moorlands and descending to more cultivated districts at lower elevations in winter, though a considerable migration of the young birds from the shores of England undoubtedly takes place. It is believed to nest on Exmoor, but its regular breeding-haunts commence with the moors of Derbyshire and North Wales, and extend thence northwards to the Shetland Isles. The record of its breeding in some of the more southern counties, though frequently stated, needs confirmation in many instances. In Ireland. Mr. R. J. Ussher says that "it breeds sparingly in about twenty-two counties in the mountain districts, and also in some parts of the great red bogs of the central plain."

Range outside the British Islands.—The Merlin inhabits the mountain districts of Northern Europe, and breeds also in Iceland and the Færoes, being resident in the last named islands. It is recorded from Novaya Zemlya, and breeds generally throughout the mountains of Central Europe and Russia, as high as 57° N. lat. It appears to extend across Northern Asia to Eastern Siberia, but is much less plentiful than in Europe, and nests rarely. It has not been recorded from Kamtchatka, and is mostly known as a migrant in Corea and the far east, visiting China and Northern India in winter. Our European birds migrate to the Mediterranean countries and North-eastern Africa, but do not penetrate so far south as the Hobby in the latter continent.

Habits.—The common name of "Stone" Falcon goes far to explain the mode of life of the Merlin, which is essentially a Falcon of the rocks and moors. Though feeding largely on insects, it captures many species of birds which it "flies down" like a thoroughbred Falcon and after the manner of the nobler Birds of Prey. Larks and Thrushes are a favourite quarry, and on the sea-coast in winter it raids among the Dunlins and other shore-birds. Many writers speak of the pluck and dash of the Merlin, but it is one of the easiest of all Hawks to tame, and is readily trained to fly at Larks in the autumn, while a female Merlin will take Plovers and Pigeons. It has even been said to strike down Grouse and to be destructive to game, and on the latter plea many of these little Falcons fall victims to the gamekeeper's gun, but the late Mr. E. T. Booth, one of the keenest and most energetic field-naturalists of the century, combats this accusation and observes:—"Whether it is that my experience with regard to this bird has been too limited to form a correct judgment, I am unable to say, but I hardly think that they are the desperate characters that they are generally described. Those which I have seen in the south were usually in pursuit of small birds, and while seeking this sort of prey they are frequently captured in the clap-nets that abound near Brighton. On the Grouse-moors in the north I have examined the remains of the victims that the Merlins have consumed near their nests, and I never found anything larger than a Dunlin, which birds, with Larks, Pipits, and large moths, principally of the egger kind, seemed to make up their bill of fare." Lord Lilford writes:—"Inquisitiveness seems to be a prominent trait in this species, for I have repeatedly seen wild Merlins come to observe the proceedings of trained Peregrines on the wing, and more than once noticed one hovering over hooded Hawks on their "cadge." The Merlin seldom flies at any great height, except, of course, when in pursuit of any soaring quarry, or bound on a lengthy journey. In our district of Northamptonshire, where this species is by no means rare on passage, we generally notice it flying low along the course of our river or tributary brooks, or along the fence-sides, in search or in pursuit of small birds. An old Wagtail or Pipit cuts out a Merlin's work for her; and I have often witnessed beautiful and prolonged flights at these birds, which, generally, in the winter season, terminated in favour of the intended victim." Lord Lilford also disbelieves in the damage which is supposed to be wrought by this little Falcon among young Game Birds, as he points out very truly that the latter are jealously protected by their parents.

A curious habit of the Merlin as regards the tenacity with which it adheres to its nesting-place is related by Mr. Seebohm. He says that he has known a patch of heather, only some couple of yards square, which had a Merlin's nest for many years, though no other breeding-place could be found within a distance of eight or ten miles; and, although the birds were persistently trapped or shot by the gamekeepers, year after year, a pair of Merlins always tried to nest in the identical spot the next year, only to be destroyed again. As they were never allowed to rear their young, it could not be the latter which returned on migration to the favourite spot, and its selection year after year is a very curious fact.

The Merlin returns from its winter haunts at the end of March or the beginning of April, laying about the middle of May.

Nest.—Generally consisting of a hole scraped in the ground, with a few twigs of ling or dry grass and roots. On the moors it is built generally on a slope among the heather, and in other localities on the ledge of a rock.

Eggs.—Four or five in number; usually of a clouded red, varying in shade from light or deep chestnut to a reddish-chocolate tint. The ground-colour is mostly obscured, but in the rare examples where the cloudings are so sparse as to allow the underlying colour to be seen, the latter is of a creamy-white, and the chestnut forms small spots and larger blotches. The eggs of the Merlin are often impossible to distinguish from those of the Hobby, and also from those of the Kestrel, though they seem never to vary to a pale form like so many of the Kestrel's eggs do. Axis, 1·45–1·6 inch; diam., 1·15–1·25.

THE GYR-FALCONS. GENUS HIEROFALCO.

Hierofalco, Cuvier, Règne Anim. i. p. 312 (1817).
Type, *H. candicans* (Gm.).

The Gyr-Falcons are giant Kestrels, and in the case of the Saker Gyr-Falcon (*Hierofalco saker*) and Henderson's Gyr-Falcon (*Hierofalco hendersoni*) the plumage is red and not unlike that of a Kestrel. Both the Gyr-Falcons and Kestrels differ from the true Falcons (*Falco*), as typified by the Peregrine, in having the outer and inner toes about equal in length, whereas in every true Falcon the outer toe is longer than the inner one. The nostril in the Gyr-Falcon has always a central tubercle. The tarsus is finely reticulate in front, and is not double the length of the middle toe. Although the proportions of the toes are the same in the Gyr-Falcons and the Kestrels, the former have a somewhat less pointed wing, the distance between the tips of the primaries and secondaries being equal to, or less than half of, the length of the tail.

The true Gyr-Falcons are all birds of northern countries, and occur throughout the whole of the arctic and sub-arctic portions of the Old and New Worlds. The Kestrel-like Gyr-Falcons, *H. saker*, *H. hendersoni*, and *H. mexicanus*, have a more southern habitat, and carry the range of the genus to Mexico in the New World, and to South-eastern Europe, Central Asia, and India in the Old World.

I. THE GREENLAND GYR-FALCON. HIEROFALCO CANDICANS.*

Falco candicans, Gmelin, Syst. Nat. i. p. 275 (1788); Newton, ed. Yarr. Brit. B. i. p. 36 (1871); Dresser, B. Eur. vi. p. 21, pl. 368, 369 (1876); Seebohm, Brit. B. i. p. 16 (1883); Saunders, Man. Brit. B. p. 331 (1889); Lilford, Col. Fig. Brit. B. part xvii. (1891).

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* This species is called *Falco islandus* of Brünnich by the American ornithologists. The work, however, dates from 1764, and was therefore published before the 12th edition of Linnæus in 1766, which is the recog-

Falco gyrfalco (*nec* L.), Macg. Brit. B. iii. p. 284 (1840).
Hierofalco candicans, Sharpe, Cat. B. Brit. Mus. p. 411 (1874); B. O. U. List Br. B. p. 101 (1883).

(*Plate L.*)

Adult Male.—Snow-white, with scarcely a spot. *The head and under-parts snowy-white*, entirely unspotted, or perhaps with a few black stripes on the nape; on the back a few drops of black, some inclined to be longitudinal in shape, others pear-shaped or oval in form; quills white, with remains of spots, or notches, on the outer web, and a few fragments of bars on the inner webs, which are for the greater part white; tail pure white, with white shafts; cere and orbits yellow; bill pale yellow, with a bluish tip; feet pale yellow; iris dark brown. Total length, 23 inches; culmen, 1·1; wing, 14·5; tail, 7·8; tarsus, 2·3.

Adult Female.—Similar to the male, but seldom so completely white. Total length, 23 inches; culmen, 1·5; wing, 16·2; tail, 9·5; tarsus, 2·35.

Young Birds.—White, but never with a pure white head or under-parts, being streaked with brown, the pattern somewhat irregular on the upper surface, and confined to longitudinal streaks on the under surface; lores and sides of face streaked with brown; the tail white, the centre feathers with brown cross-bands, more or less broken, and forming only spots or mottlings on the other feathers.

I am at issue with some of our most distinguished ornithologists as to the changes of plumage through which the Greenland Gyr-Falcon passes in arriving at maturity. Many of them believe that the differences exhibited by a series of specimens are caused by there being a light and dark race, while I consider that every difference can be accounted for by the age of the bird.

First of all, therefore, it is necessary to state that a Green-

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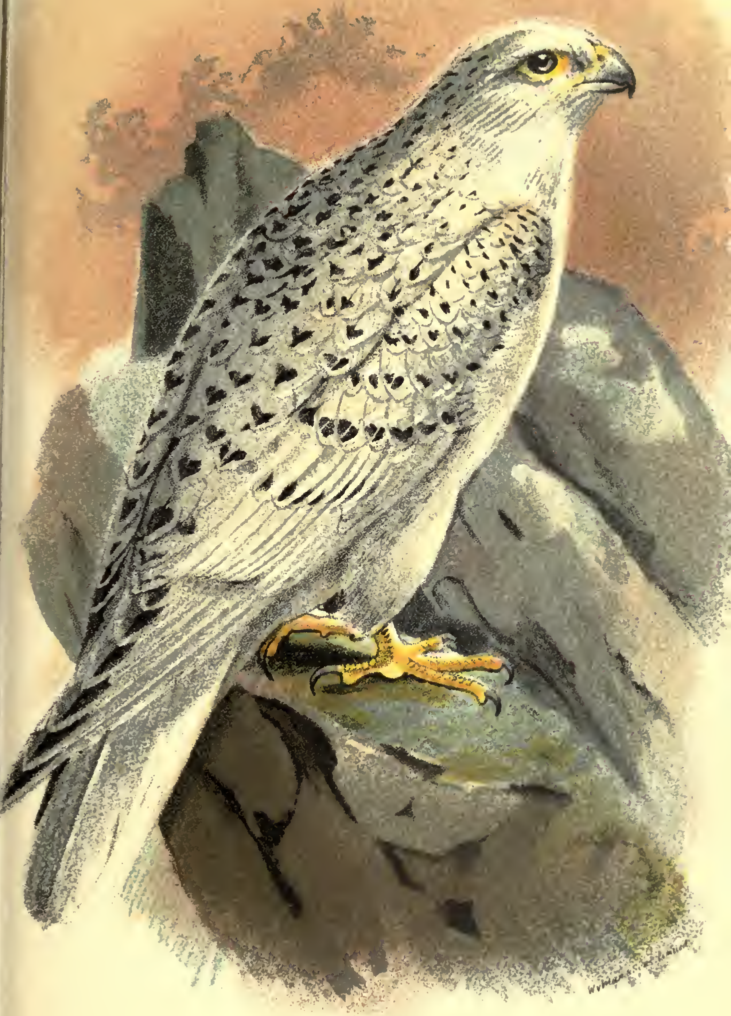
nised date from which British ornithologists start. Dr. Stejneger, however, says (Auk, ii. p. 185) that "English authors, starting from the 12th edition of Linnæus, will have to call it *Falco islandus*, Fabricius, Faun. Groenl. p. 58 (1780, *ex* Brünn.)." As, however, the name of *islandus* is misleading, and has been referred to the Iceland Falcon by most European authors, it is far better to keep to the clearly-defined name of *candicans*, about which there can be no doubt, and hence no confusion.

PLATE



GREENLAND FALCON.

land Gyr-Falcon can be told, at any age, *by its yellow bill, and by never having bars* on the flanks. If a specimen comes from Greenland with a blue bill and with cross-bars on the flanks, it is not a Greenland Gyr-Falcon, but Holboell's Gyr-Falcon (*Hierofalco holboelli*). All the Grey Gyr-Falcons, of which *H. holboelli* is a light arctic race, have *blue bills and barred flanks.* The above characters at once separate the Greenland Gyr-Falcon from the Grey Gyr-Falcons, *H. gyrfalco* and its allies, of which *H. holboelli* is one.

The young *H. candicans* is a streaked bird with *longitudinal* brown streaks on the flanks. Of this there can be no doubt; but many white birds are often transversely barred with black, while others are white, with longitudinal broad streaks in the process of breaking up into cross-bars or spots. This plumage I believe to be indicative of a *change of pattern* in the feather, which is effected without any moult. There is nothing wonderful in this theory, for many Hawks and other birds change their colour without shedding a feather. The barred specimens may be birds of the second year, or females, which always take longer to assume adult plumage than the males, or they may even be due to hybridisation with Holboell's Gyr-Falcon, though I never like to adopt this last "refuge for the destitute," in the case of changes of plumage which we do not exactly understand. My conclusions have been derived from specimens shot in a wild state, and I decline to be influenced by observations made from these Gyr-Falcons in confinement, for a snowy-white bird like the present species would assuredly be influenced by confinement in a smoke-laden atmosphere like that of England, away from its arctic surroundings, and depending on the strength necessary to perform its normal functions of moulting on the food supplied to it in a menagerie.

Range in Great Britain.—An accidental visitor, occurring during the autumn and winter migrations. Although it has been recorded at intervals in various counties of England, most of the specimens have been procured in Ireland and Scotland, as might have been expected in a wanderer from the north.

Range outside the British Islands.—The Greenland Gyr-Falcon is a typical arctic species, and only occurs within European limits during the autumn and winter, when a few individuals, mostly young birds, wander from their northern home and occur in more southern latitudes. It breeds in Northern Greenland, and probably in all the circumpolar lands, as Dr. Stejneger found it nesting on Bering Island. It also breeds in north-eastern Arctic America, and may possibly do so in other northern portions of the American continent.

Habits.—In the Middle Ages this splendid bird was in great request among Falconers, and was chiefly used for the capture of Cranes and Herons, and, in more recent Hawking days, the Greenland Falcon has been trained to catch Hares and Rabbits. In a wild state it feeds on Ptarmigan and Willow-Grouse, as well as Lemmings and other small animals, and, like the Snowy Owl, it has to migrate south in winter, when its food-supply disappears from the arctic tundras, and the country is covered with snow. Although a powerful bird, the Greenland Falcon does not possess the dashing spirit of the Peregrine, and Lord Lilford writes:—"My experience of this bird in captivity is to the effect that it is extremely docile, and a very fine and powerful flyer and stooper, but what we call in Falconry a poor "footer," that is, it is not able, or more probably not disposed, to bind to and grasp its quarry firmly; it is also by no means hardy of constitution, and is difficult to keep in good condition for field purposes." He also states that an old gamekeeper, John Campbell, told him that he had frequently seen Greenland Falcons near Loch Rannoch in Perthshire during the winter months, and that the birds seemed to prefer Rooks to any other quarry, but that they made the wild-fowl very "uneasy"; he never saw one in pursuit of a Red Grouse, but once saw one make a stoop at an old Blackcock; on the whole, from his professional point of view, he did not look upon the Greenlander as such a "bad vermin!" as the "Hunting Hawk or Peregrine."

Nest.—None, the eggs being laid upon the bare rock, but sometimes the old nest of some other bird is adopted.

Eggs.—Four in number.

II. THE ICELAND GYR-FALCON. HIEROFALCO ISLANDICUS.

Falco islandicus, Hancock, Ann. Nat. Hist. ii. p. 247 (1839).
Falco gyrfalco, pt. Macg. Brit. B. iii. p. 284 (1840).

Falco islandus (*nec* Gm.), Newton, ed. Yarr. Brit. B. i. p. 46 (1871); Dresser, B. Eur. vi. p. 25, pls. 370, 371 (1876); Saunders, Man. Br. B. i. p. 333 (1889); Lilford, Col. Fig. Br. B. part xxix. (1894).

Hierofalco islandus, Sharpe, Cat. B. Brit. Mus. i. p. 414 (1874); B. O. U. List Br. B. p. 102 (1883).

Falco gyrfalco-candicans, Seebohm, Brit. B. i. p. 16 (1883).

Adult Male.—Entire head white, with blackish shaft-streaks, very narrow on the forehead and broader on the nape, with a slight greyish shade under the eye and over the ear-coverts; upper surface of body greyish-brown, clearer on the rump, all the feathers tipped and barred across with white, these bars sometimes not continuous; quills dark brown, with narrow white tips, the feathers barred on the inner web, but notched and freckled on the outer web with white; tail ashy, with a white tip, alternately barred with blackish, the intermediate spaces being ashy-white, sometimes freckled with blackish; under surface of body white, the throat almost unspotted, the chest covered with central streaks developing into tear-drop spots at the end; rest of under surface of body spotted with blackish, taking the form of bars on the sides of the body, under tail-coverts, and flanks, being rather numerous and close-set on the latter; under wing-coverts white, spotted or half-barred with blackish; bill pale horn-blue, yellow at base of lower mandible; cere, orbits, and feet yellow; iris dark brown. Total length, 22 inches; culmen, 1·4; wing, 14·6; tail, 9·0; tarsus, 2·3.

Adult Female.—Similar to the male, but larger. Total length, 24 inches; culmen, 1·4; wing, 16·0; tail, 9·0; tarsus, 2·4.

Young Birds.—Brown; all the feathers of the upper surface being margined with whitish, with conspicuous oval spots of white on the upper tail-coverts; tail brown, with broad bands of whitish; head whitish, the feathers streaked with dark brown down the centre, the hind-neck more conspicuously mottled; under surface white, the throat unspotted; all the rest of the feathers conspicuously centred with brown, these markings somewhat oval in form, excepting on the flanks, where they are irregular, the brown occupying the greater portion of the feather; cere, orbits, and feet bluish-grey.

Characters.—The Iceland Gyr-Falcon is one of four or more races of the genus *Hierofalco*, which are distinguished from the Greenland Gyr-Falcon by having *a blue bill and barred flanks.* Four distinct races of Grey Gyr-Falcon can, I think, be certainly recognised. One of them is the Black Gyr-Falcon, *Hierofalco obsoletus* of American authors,* from Labrador. The second is the Iceland Gyr-Falcon, peculiar to Iceland, represented in Southern Greenland by Holboell's Gyr-Falcon (*H. holboelli*), while the fourth is the well-known Norwegian Gyr-Falcon (*H. gyrfalco*), which I believe to extend from Scandinavia to Eastern Siberia, and to North America also. Whether the various other races, *H. uralensis*, *H. grebnitskii*, and others, are distinct from the ordinary *H. gyrfalco*, I have never had enough material before me to enable me to pronounce an opinion.

Range in Great Britain.—Like the Greenland Gyr-Falcon, the present species is only an accidental visitor in winter, and is decidedly less frequent than the last-named bird. It has occurred in Scotland and the north of England, as well as in Ireland.

Range outside the British Islands.—My opinion is that this Gyr-Falcon is peculiar to Iceland, and is only found elsewhere on accidental migration. In Southern Greenland it is replaced by *H. holboelli.*

Habits.—Very little has been recorded of the Iceland Gyr Falcon in its native home, and several recent observers who have visited Iceland have not seen the bird at all during their expeditions. The habits are doubtless the same as those of the other species of the genus. It feeds on Plovers and sea-fowl, according to a note supplied to Mr. Hewitson by Mr. Proctor, who visited Iceland and found remains of Whimbrel, Golden Plover, Guillemots, and Ducks, about the nest. Ptarmigan also are largely captured. Faber says that after the nesting-season, both adult and young birds approach the homesteads, when they sit on elevations, and often fight with the Ravens (cf. Newton, *l.c*). Lord Lilford writes :—"From a Falconer's point of view, I have had but a very slight acquaintance with the Iceland Falcon, and am not inclined to rate her highly, but it must be borne in mind that all the birds of this species trained in this country have necessarily had the great disadvantage of a sea-passage, and, in many instances, have arrived so much damaged in plumage that they could not be put on the wing till the first moult, and all Falconers know how much Hawks suffer from a lengthened period of inactivity. Our ancestors seem, however, to have esteemed the Icelanders highly; there are traditions of their being trained to take the Kite, and in more recent days a few of these Falcons were flown at Herons in the Netherlands with success. . . . In disposition this Falcon seems to be tameable enough, but by no means remarkable for docility, of a somewhat sluggish temperament, and it is by no means so hardy as might be expected from the climatic conditions of the country of its origin."

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* In 1874 I believed this name of Gmelin's to refer to a Buzzard, and not a Gyr-Falcon. The general opinion, however, now seems to be that it was intended for the latter.

Nest.—Placed on the ledges of cliffs, and formed of twigs and dead sticks, and lined with wool. Mr. Proctor said, of those he found in Iceland, that they much resembled the nests of the Raven. The old nests of that bird are probably often utilised by the Gyr-Falcon.

Eggs.—Four in number, the ground-colour being dull white, but scarcely visible on account of the closeness of the rufous clouding in many specimens, which renders the general appearance of the eggs almost uniform rufous. Other eggs are whity-brown, mottled and blotched with reddish-brown, principally near the larger end. Axis, 2·2–2·4; diam., 1·8–1·9.

III. THE GREY GYR-FALCON. HIEROFALCO GYRFALCO.

Falco gyrfalco, Linn. Syst. Nat. i. p. 130 (1766); Dresser, B. Eur. vi. p. 15, pl. 367 (1875); Seebohm, Br. B. i. p. 16 (1883); Saunders, Man. Br. B. p. 334 (1889); Lilford, Col. Fig. Brit. B. part xxx. (1895).

Hierofalco gyrfalco, Sharpe, Cat. B. Brit. Mus. i. p. 416 (1874); B. O. U. List Brit. B. p. 101 (1883).

Adult Male.—Above blue-grey, with broad greyish-black cross-bands, the bars in alternate series of black and grey; lower back, rump, upper tail-coverts, and tail much clearer blue-grey, with narrow cross-bars of greyish-black, these bars being of the same width to the extremity of the tail; lores and forehead whitish; crown of head grey, mottled with black; the sides of the head from behind the eye and the nape varied with whitish; cheek-stripe, feathers under the eye and on the upper-line of the ear-coverts, as well as the sides of the neck, greyish-black; the rest of the face whitish, with median lines of black on the feathers; wing-coverts like the back; quills dark brown, externally mottled and freckled with grey, not forming regular bars, the inner secondaries exactly like the back; under surface of body white, the throat unspotted, the chest longitudinally streaked with black, widening out towards the apex of the feather; rest of the body rather scantily spotted with greyish-black, taking the form of bars on the flanks, under tail-coverts, and axillaries; under wing-coverts white, with black markings, scarcely equivalent to bars; bill blue, black at tip; feet yellow; iris dark brown. Total length, 20 inches; culmen, 1·3; wing, 14·5; tail, 8·0; tarsus, 2·0.

Adult Female.—Slightly darker, and a little larger than the male. Total length, 21 inches; culmen, 1·4; wing, 15·0; tail, 9·5; tarsus, 2·15.

Young.—Brown, with fulvous spots and mottlings on the edges of the scapulars and inner secondaries, and rather more distinct on the upper tail-coverts; tail dark brown, with imperfect bands of fulvous; wing-coverts and quills externally dotted with minute fulvous spots, the latter internally barred with buff; head brown, mottled with buffy-white on the eyebrow, cheeks, sides of neck, and especially on the nape and hind-neck; under surface of body white, with central dark brown patches on each feather, those narrower on the throat; bill horn-blue, yellow at the base of the lower mandible; feet grey.

Characters.—The adult male of the Gyr-Falcon is wonderfully like an adult Peregrine, except that the latter has always a darker shade towards the end of the tail, which is never seen in a Gyr-Falcon.

The Norwegian race of the Gyr-Falcon is always distinguished by its dark head. It has, of course, barred flanks like

H. islandicus and *H. holboelli*, but is much darker than either of these. It may be remarked that no one has hitherto been able to detect any differences between the young of these races.

Range in Great Britain.—The first specimen of the Norwegian Gyr-Falcon actually recorded in this country was identified by myself. It was shot by one of the attendants in my department at the British Museum, Mr. George Hunt, near Orford in Suffolk, in October, 1867, and remains in the possession of his brother, Mr. E. J. Hunt, all our efforts to purchase the specimen for the British section of the National Collection having proved futile. The bird in question was immature, and therefore difficult to identify with certainty, but at the time I examined the specimen I had just concluded my work on the *Accipitres*, and had the Gyr-Falcons well in my mind, so that I have no doubt that the specimen was correctly identified. It was shown by me to Mr. Seebohm, who also considered it to be a Norwegian Gyr-Falcon. A second specimen, killed in Sussex, had been in Mr. Borrer's collection since 1845, but had always been looked upon as a young Iceland Gyr-Falcon, till Mr. Gurney recognised it as an adult Norwegian Gyr-Falcon.

Range outside the British Islands.—The exact range of the present species is very difficult to determine, as it has been divided by naturalists into several races, and it is impossible to determine the value of the latter without having a large number of specimens together for comparison, and at present no Museum possesses a sufficiently complete series. It is an inhabitant of Scandinavia, and, in my opinion, it will be found to extend across Siberia, as well as the whole of the northern part of the New World, or, as the American naturalists state, the interior of Arctic America, from Hudson's Bay to Alaska.

Habits.—In their manner of life all the Gyr-Falcons seem to be very much alike, and the Norwegian bird resembles the Iceland Gyr-Falcon in its flight and general habits. It feeds principally on Ptarmigan, but it also captures Whimbrel and water-fowl of various kinds.

Nest.—For our information as to the nesting of the Gyr-Falcon we are almost entirely indebted to the researches of the late John Wolley, who found many nests in Lapland.

The nest is generally placed on a ledge of rock in a cliff, and is often very difficult to reach, but in certain districts it is to be found in a tree, and Professor Collett states that, according to his experience, the Gyr-Falcon almost invariably nests in the top of large fir-trees. Professor Newton well remarks:—"The curious fact that the Gyr-Falcon, like so many other *Accipitres*, adapts itself to circumstances, breeding in trees where rocks are wanting near places which abound with food for its offspring, as is the case in the district of Hanhi-järwimaa, will not escape the student's notice, and will furnish, I think, another good warning against too hasty generalisations with regard to the habits of a bird or other animal. It was not until the fourth summer of Mr. Wolley's residence in Lapland that he became acquainted with this fact, and then, as his remarks show, he was justly sceptical concerning it at first." (Ooth. Woll. p. 87).

The nest is made of stout sticks, and is used for many years, where the birds are not disturbed. A rude lining of grass is sometimes present, as well as a few green willow-twigs.

Eggs.—Four in number, the variations in tint being well described by Mr. Wolley in the "Ootheca Wolleyana." Those in the British Museum are mostly of a light reddish cast, dotted and stippled with reddish-brown of a darker tint. Some of the specimens show a ground-colour of reddish-white, with somewhat coarser rufous blotches and spots, but in certain examples the colouring of the egg is almost entirely rufous, without any markings whatever. Axis, 2·2–2·35 inches; diam., 1·75–1·9.

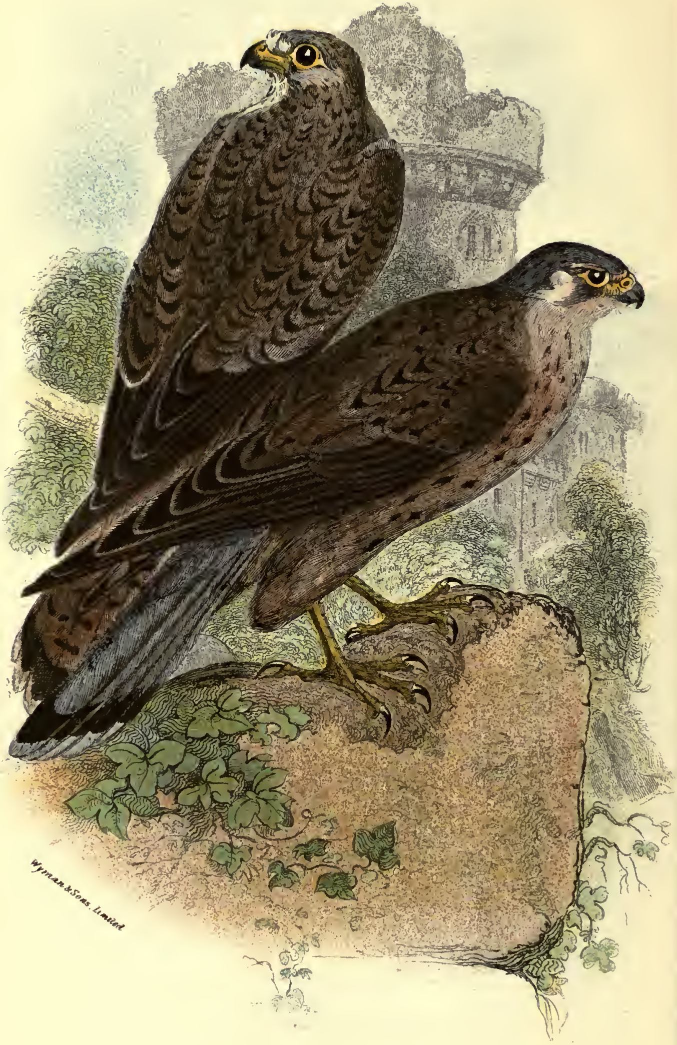
THE KESTRELS. GENUS CERCHNEIS.

Cerchneis, Boie, Isis, 1826, p. 976.

Type, *C. tinnunculus* (L.).

The Kestrels are nearly cosmopolitan, and there is scarcely a country, excepting the Pacific Islands, where these small Hawks do not occur. They have the same short toes as the Gyr-Falcons, the outer and inner toes being about equal in length, but the wings are more pointed than in the last-named

PLATE LI.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KESTREL.

birds. They are true Falcons, with a tooth in the bill, and a central tubercle in the nostril.

With the exception of some of the more tropical species, Kestrels are migratory birds, and several of them go south in immense flocks, as has been noticed by many observers in their winter quarters in Africa. They are principally insect-feeders, and devour large numbers of locusts, in pursuit of which their large gatherings often take place.

I. THE COMMON KESTREL. CERCHNEIS TINNUNCULUS.

Falco tinnunculus, Linn. Syst. Nat. i. p. 393 (1766); Macg. Brit. B. iii. p. 325 (1840); Dresser, B. Eur. vi. p. 113, pl. 384 (1871); Newt. ed. Yarr. Brit. B. i. p. 79 (1871); Seebohm, Brit. B. i. p. 45 (1883); Saunders, Man. Brit. B. p. 343 (1889); Lilford, Col. Fig. Br. B. part xvi. (1890).

Cerchneis tinnunculus (L.), Sharpe, Cat. B. Brit. Mus. i. p. 425 (1874).

Tinnunculus alaudarius, B. O. U. List Brit. B. p. 104 (1883).

(*Plate LI.*)

Adult Male.—General colour above rufous fawn-colour or pale chestnut, with a few arrow-head shaped marks of black, plainer on the inner secondaries; primary-coverts and quills dark brown, the former narrowly margined with rufous, the primaries notched with white for about two-thirds of their length, the inner primaries and outer secondaries narrowly edged and tipped with buffy-white; head and neck clear slaty-blue, with narrow black shaft-stripes; forehead buffy-white, as also a narrow eyebrow; cheeks silvery-grey, inclining to blackish below the eye, and on the fore-part of the cheeks, forming a tolerably distinct moustache; lower back, rump, upper tail-coverts, and tail clear slaty-blue, the latter tipped with white, before which is a broad sub-terminal band of black; throat buff, not spotted; remainder of under surface of body rufous fawn-colour, the chest-feathers mesially streaked with black, these black centres being larger and more oval in shape on the flank-feathers; thighs clear rufous, unspotted; under wing-coverts white, spotted with black; bill bluish horn-colour, black at the tip, yellowish at the base; cere, orbits, and feet yellow; iris brown. Total length, 12·5 inches; culmen, 1·75; wing, 9·2; tail, 6·7; tarsus, 1·6.

Adult Female.—Differs from the male in being rufous above, banded with black; on the rump a bluish shade, which overspreads the tail in very old individuals; head rufous, streaked with black; tail rufous, banded with black, the bands not always continuous, the tip buffy-white, with a sub-terminal band of black. Total length, 12·5 inches; culmen, 0·75; wing, 9·2; tail, 6·5; tarsus, 1·6.

Young Birds.—In first plumage the young male and female are alike, and both resemble the old hen-bird, but are rather paler, and have more distinct stripes on the back. The first signs of approaching maturity in the young male are seen on the rump and tail, which generally change to blue-grey, before the grey head is assumed.

In 1874 Mr C. Bygrave Wharton procured a female Kestrel in Hertfordshire, which had a slaty-blue tail like the male, with black bars, the rump being also slaty-blue. This specimen exemplifies further the fact that I have already noted, that in very old females of the Birds of Prey there is a tendency to assume a plumage like that of the males.

Nestling.—Covered with white down.

Range in Great Britain.—The Kestrel is found in every county throughout Great Britain and Ireland, and nests in the wooded districts, as well as in the cliffs of the sea-shore and inland mountains. It is in some degree migratory, descending to the lower ground from the highlands in winter. A certain number also leave the country in the autumn, being found on our southern coasts at that season of the year, while an influx of Kestrels also takes place from Northern Europe to our eastern coasts.

Range outside the British Islands.—The Kestrel is almost universally distributed throughout the Palæarctic Region, and breeds up to the Arctic Circle. It is a summer migrant to Central Europe, where only a few remain during the winter. It is said to occur throughout Siberia, but in Eastern Siberia and in Japan the Kestrels are larger and darker in colour, and it is this dark race, *C. japonicus.* which occurs throughout

China. Our European Kestrel visits the Gold Coast in winter and extends its range a considerable way down East Africa, and perhaps to the southern districts of the continent. India is also a winter home for the species, which is resident in the Himalayas.

In many countries bordering its southern range the Kestrel is represented by a dark resident race. Thus, in the Azores, in the mountains of Abyssinia, and again in those of Southern India and Burma, there is a distinct difference in size and in the deeper colouration of the Kestrels, which can hardly be looked upon as specific, but which show modifications effected by a tropical habitat.

Habits.—From its habit of hovering in the air, the Kestrel is frequently noticed in the country, where it is known in many places as the "Windhover." It is to be seen on almost any evening in the neighbourhood of the stubble-fields, where, as if held in the air by a thread, it hovers on the look-out for field-mice. If unsuccessful in its search, it will circle away to another part of the field, and then commence to hover again, till it falls like a bolt on its unsuspecting prey. Its food consists not only of mice, moles, and other small mammalia, but also largely of insects, frogs, lizards, &c. Cockchafers are a favourite food, and these and other beetles it devours on the wing. It is but rarely that the Kestrel is driven by sheer necessity, in a droughty season perhaps, to make a raid on the Pheasant-coops to find food for its young, and, as a rule, the bird is a real friend to the farmer and gardener. So little do small birds regard it as an enemy, that I have seen a Kestrel perched on a straw-stack and surrounded by Sparrows, who were pilfering gaily without heeding the Hawk, and when the ittle birds flew off, affording, as one would have thought a splendid opportunity for a raid on such a flock, the Kestrel did not attempt to follow.

That they can, however, when hard pressed for food, be decidedly destructive to young game has been proved by several observers, and Mr. De Winton lately shot a pair in the act of killing young Pheasants. This is, however, undoubtedly a rare occurrence, and was the more remarkable in this instance, because this particular pair seemed to be the only delinquents; all the other Kestrels, of which there were plenty in the neigh-

Characters.—To distinguish the Lesser Kestrel from the ordinary Kestrel of England, the most distinctive characters are the *whitish* claws, and the uniform rufous back in the male, while the female can only be told from the female of *C. tinnunculus* by its smaller size and by its whitish claws.

Range in Great Britain.—This species certainly deserves a place in our avifauna, for, although it was not admitted to that rank in 1871 by Professor Newton, since that date so many examples of the Lesser Kestrel have been identified within British limits, that one may reasonably believe that it occurs more often than is generally suspected, and that it is often mistaken for the Common Kestrel. At least four instances of the occurrence of the Lesser Kestrel in Great Britain are known to have taken place. The first was shot in Yorkshire in November 1867, and in May, 1877, another adult male was captured near Dover. Since then it has been obtained near Shankill in Co. Dublin, in February, 1891, and also in the Scilly Islands in March of the same year. Two specimens which had been captured at sea in the Mediterranean, in April, 1894, escaped from their captors, one in Northumberland and the other in Belfast, and Mr. Robert Patterson wrote to the "Ibis" to notify the fact, in case a Lesser Kestrel should be shot, but I have not heard that they were ever seen again.

Range outside the British Islands.—The Lesser Kestrel winters in South Africa, whither it goes with the flocks of other small insect-eating Hawks. It returns in the spring to Europe and is plentiful in the Mediterranean countries, arriving in February in Spain. A few pass the winter in the south of Europe. It is only an occasional visitor to Southern France, but has been taken in Germany and in Heligoland, as well as in the British Islands. Its eastern range extends to Central Asia, and it has of late years become very numerous in the district of Orenburg in Southern Russia.

Habits.—In the countries of Southern Europe, and especially in Spain, the Lesser Kestrel is a very common bird, commencing to breed about the end of April, and laying its eggs about the middle of May. Its food, according to Mr. Howard Saunders, consists of insects, especially cockchafers and other beetles, and grasshoppers. He says that the stairs and other approaches to the towers frequented by this and the larger Kestrel are often "covered with an accumulation of wing-cases and ejected pellets of indigestible matter." In general habits, flight, and cry the present species is said by Lord Lilford to resemble the Common Kestrel, but in his opinion it is a more entirely insectivorous bird, and takes its prey on the ground. He writes: "The two species of Kestrel are, I think, in April and May, the commonest birds in Andalucia, with perhaps the exception of the Bee-Eater. Every church-steeple, belfry, and tower, every town and village, every ruin, swarms with them. I believe I am not at all beyond the mark in saying that I have seen three or four hundred on the wing at the same moment on more than one occasion, notably at Castro del Rio in April, 1864. Both species of Kestrel continue on the wing long after sunset."

Nest.—No nest is made by this little Kestrel, and the eggs are generally laid in a hole of a building, sometimes within reach of the ground. In the Crimea, Colonel Irby found them nesting in holes in banks.

Eggs.—Four or five in number, though occasionally as many as seven are found. Although some of them are marked like the Common Kestrel's, and are only to be distinguished from the eggs of the latter by their smaller size, the series in the British Museum is undoubtedly paler and more cinnamon in tint than the eggs of *C. tinnunculus*. The eggs are minutely spotted with rufous, and less boldly blotched than the eggs of the preceding species, and the markings always seem to me to be smaller in character. Axis, 1·3–1·5 inch; diam., 1·1–1·2.

III. THE RED-FOOTED KESTREL. CERCHNEIS VESPERTINA.

Falco vespertinus, Linn. Syst. Nat. i. p. 129 (1766); Macg. Brit. B. iii. p. 313 (1840); Newt. ed. Yarr. Brit. B. i. p. 69 (1871); Dresser, B. Eur. vi. p. 93, pl. 382 (1871); Seeb. Brit. B. i. p. 42 (1883); Saunders, Man. Brit. B. p. 339 (1889).

Cerchneis vespertina, Sharpe, Cat. B. Brit. Mus. i. p. 443 (1874).

Tinnunculus vespertinus, B. O. U. List Brit. B. p. 103 (1883).

Adult Male.—General colour above leaden-grey, the wing-coverts rather paler, the greater coverts more hoary-grey; primary-coverts and quills hoary-grey, the secondaries darker and more like the back; tail brownish-black; under surface of body bluish-grey, with faint indications of black shaft-stripes; lower abdomen, vent, thighs, and under tail-coverts rich chestnut; under wing-coverts leaden-grey; quill-lining brownish-black; cere, orbits, and feet bright brownish-red; claws yellowish-white, with horn-coloured tips; bill yellowish horn-colour, blackish at tip; iris light brown. Total length, 11·5 inches; culmen, 0·75; wing, 9·8; tail, 5·6; tarsus, 1·15.

Adult Female.—Different from the male. General colour above bluish-grey, with transverse black bars on all the feathers, the mantle a little darker and more ashy; tail also bluish-grey, a little paler towards the tip, with narrow black bars, the sub-terminal one much broader; quills brownish, externally ashy-grey, barred on the inner web with whitish; head, hind-neck, and under surface of body rufous, inclining to buff on the under tail-coverts; forehead whitish; lores and feathers round the eye greyish-black; sides of face and neck, as well as the throat, yellowish-white, with faint indications of a pale rufous moustachial streak; soft parts as in the male, but less bright. Total length, 11 inches; culmen, 0·7; wing, 9·7; tail, 5·6; tarsus, 1·15.

Young Birds.—At first resemble the old female, and have the tail barred with black; the fore-part of the crown whitish; the feathers of the mantle edged with rufous; upper-part of ear-coverts and feathers round the eye greyish-black; a faintly indicated moustachial streak; throat and sides of neck creamy-white; under surface of body rufous, paler than in the old female, the feathers with blackish centres, developing into spots at the end; cere, orbits, and feet reddish-yellow; claws yellowish-white, with dark grey tips.

Range in Great Britain.—An accidental visitor in spring and summer, rarely occurring in autumn. Mr. Howard Saunders states that the species has been recorded upwards of twenty times, and has occurred in nearly all the southern and eastern counties of England, from Cornwall to Norfolk, as well as in Denbighshire and Shropshire, Yorkshire, Durham, and Northumberland. I can also add a record from near London, for a few years ago a beautiful female bird was brought to me at the British Museum in the flesh. It had been shot near Nunhead on the previous day, having flown into a tree near some pigeon-shooting grounds. I did not know at the time that any particular interest attached to the records of the Red-footed Kestrel in the South of England, and omitted to take down full particulars.

Three specimens have been shot in Scotland, and one was procured in Co. Wicklow in Ireland in 1832.

Range outside the British Islands.—The Red-footed Kestrel is a bird of Eastern Europe and Western Siberia, being found over the greater part of Russia, and as far east as Krasnoyarsk. It breeds also in Hungary, and has occurred as far north as 65° in Finland, as well as in the south of Sweden. Professor Menzbier thinks that an extension of its range to the northern provinces of Russia has taken place within the last fifty years, and in places in the south of Russia, such as the steppes of Orenburg, where the Red-footed Kestrel used to breed freely, it has been ousted to a great extent by an influx of Lesser Kestrels of late years. The winter home of the present species is in South Africa, to which it migrates in immense flocks along with Hobbies and Lesser Kestrels. In Eastern Siberia its place is taken by an allied species, with white under wing-coverts, called *C. amurensis*, which winters also in South Africa, but is there found chiefly on the Zambesi and in the Transvaal, and seems to preserve, even in its winter home, its more eastern habitat.

Habits.—This little Kestrel is one of the prettiest of all the Falcons, and is remarkable for the difference in colour between the sexes, which is greater than in the majority of Birds of Prey. The food of the Red-footed Kestrel consists almost entirely of insects, which it catches and devours on the wing, such as dragon-flies, beetles, moths, and grasshoppers, while in company with other birds it follows the swarms of locusts in South Africa. In all its ways it is a Kestrel, and has the same querulous cry. In its nesting, as well as on its migrations, it seems to be gregarious, for it is often found breeding in company.

Nest.—The present species does not build a nest of its own, but adapts the old nest of a Crow or Rook to its wants.

Eggs—The British Museum possesses so few eggs of this species that I am not able to describe them at length. They appear to resemble some of the eggs of the Common Kestrel so closely, as to be practically inseparable. According to Mr. Goebel, who has taken numbers of the eggs of *C. vespertina* in Southern Russia, they are not so coarsely grained as those of the Common Kestrel, have much less lustre, and are, on an average, smaller, and not only absolutely, but proportionately lighter. The colour of our Kestrels' eggs is a darker, browner red compared with the yellower red of *C. vespertina*. Axis, 1·25–1·6 inch; diam., 1·0–1·2.

THE PELICAN-LIKE BIRDS.
ORDER PELECANIFORMES.

Tropic Birds (*Phaëtontes*), Frigate Birds (*Fregati*), Pelicans, Cormorants, and Gannets—these are the groups of birds which constitute the large order *Pelecaniformes*. These birds have also been united together under the heading of *Steganopodes*, all of them having the hallux, or hind-toe, united to the second by a web, so that, in fact, all four toes are connected by a membrane.

THE PELICANS. SUB-ORDER PELECANI.

The members of this Sub-order are easily recognised by their peculiar bills and large gular pouches, which are capable of distension to an enormous extent. A Pelican is a tropical bird and seldom wanders far north, though recently some of these birds are said to have been noticed in West Jutland. The White Pelican (*P. onocrotalus*) used at one time to inhabit England, as its bones have been found in the fens of Norfolk, and Montagu mentions the shooting of a Pelican at Horsey Fen in 1663, but this was believed to have been one of the King's birds escaped from St. James' Park. The species can, therefore, scarcely be said to require notice in the present Work, and, indeed, Mr. Howard Saunders does not even mention it in his "Manual."

THE CORMORANTS.

SUB-ORDER PHALACROCORACES.

As in all the *Steganopodes*, the Cormorants have a desmognathous, or "bridged," palate, and they have the four toes all joined together by a web. They have also a remarkably hooked bill, with a sort of nail at the end. The feet in these birds are placed very far back, and the thighs are feathered down to the tarsal joint.

Cormorants and Shags are found in nearly every part of the world, and are most numerous in species in the Southern Hemisphere.

THE CORMORANTS AND SHAGS.

GENUS PHALACROCORAX.

Phalacrocorax, Briss. Orn. vi. p. 511 (1760).

Type, *P. carbo* (Linn.).

Any number of anatomical and osteological characters can be brought forward for the identification of the Cormorants, but in a book dealing only with British birds we have, happily, no need to go into these minuter details, for our two species are easily recognisable by the merest tyro. Thus their webbed feet, with all four toes joined together by a membrane, are a leading character; secondly, their black plumage is distinctive, and their hooked bills and bare faces will distinguish them from all our British sea-birds, except the Gannets.

Two species inhabit the British area, the Common Cormorant and the Green Cormorant, or Shag, and there is no difficulty in distinguishing these black-plumaged birds from the white-plumaged Gannets.

I. THE CORMORANT. PHALACROCORAX CARBO.

Pelecanus carbo, Linn. S. N. i. p. 216 (1766).

Phalacrocorax carbo, Macg. Br. B. v. p. 380 (1852); Dresser, B. Eur. vi. p. 151, pl. 388 (1879); B. O. U. List Br. B. p. 105 (1883); Saunders, ed. Yarr. Br. B. iv. p. 143 (1884); Seebohm, Br. B. iii. p. 650 (1885); Saunders, Man. Br. B. p. 349 (1889); Lilford, Col. Fig. Br. B. part xxii. (1892).

Adult Female.—General colour above glossy blue-black from the hind-neck to the tail, dividing the mantle and back down the centre; the sides of the mantle, remainder of the back, scapulars, and wing-coverts bronzy-brown, with broad edges of blue-black to all the feathers; bastard-wing, primary-coverts, and quills black, externally greyish-bronze, the feathers with a broad black margin as well; tail-feathers slaty-black, with greyish shafts; crown of head and neck glossy blue-black, with a very evident nuchal crest; under surface of body blue-black; sides of face, ear-coverts, cheeks, and upper throat creamy-white, ascending to a point in the centre of the chin, which is bare like the lores, region of the eye, and fore-part of the cheeks; the crown, neck, and lower throat ornamented with numerous white filaments, which completely conceal the black ground-colour; on the sides of the lower flanks a large white patch; sides of upper breast bronzy-brown, the flanks bordered with black, as on the back; under wing-coverts and axillaries black; bill brown above, slate-colour below, including edge of lower mandible; gular skin lemon-yellow; feet black; iris green. Total length, 32 inches; culmen, 2·6; wing, 12·8; tail, 6·0; tarsus, 2·5.

Adult Male.—Similar to the female, but larger and with the crest somewhat more developed. Total length, 30 inches; wing, 12·5.

Winter Plumage.—Black like the summer plumage, but not having the white filaments on the head and neck, and the white patch on the thighs also being absent.

Young Birds.—Browner above than the adults, and with blackish margins to the feathers, which are greyish-brown rather than bronzy; the head and neck ashy-brown, with blackish centres to the feathers; sides of face, throat, and fore-neck ashy-brown; chin, upper throat, and sides of face dull white; rest of the under surface of the body white, the sides of the body brown, as well as the under tail-coverts; bill pale horn-colour; cere none; gular skin yellow; iris light green.

The adult black plumage is gained apparently by a change in the feather, the tip of which becomes gradually black or brown, and this colour spreads by degrees over the whole plumage.

Nestlings.—At first bare and of a leaden grey-colour, but afterwards becoming covered with dense sooty-brown down, and remaining in this till they are more than half the size of their parents.

Characters.—The Cormorant may be told from the Shag by its larger size and *by having fourteen tail-feathers*. I have seen one specimen from Hungary which had fifteen rectrices. The colour is always more of a blue-black, not greenish like the Shag.

The white filaments which adorn the head of the Cormorant, and the occipital crest, are apparently retained for a short time only. The female described was obtained in February, and has all the ornamental plumes developed to the fullest extent, including the white patch on the flanks, but these are all shed by the time that nesting commences, so that the real breeding plumage is exactly similar to that of the winter dress after the autumn moult.

Range in Great Britain.—Although mostly a bird of the sea-coasts, the Cormorant is often met with inland, and there is scarcely a county in the British Islands where stragglers have not been obtained at some time or other. It is found in most parts of our area on the coasts, but is commoner in some districts and rarer in others, where the Shag predominates. On the east coast of England, between the Thames and the Humber, it is rarer, probably on account of the absence of breeding-places suitable to the species, but north of Flamborough and along the Scottish coast it occurs plentifully, while on our western coasts the Shag is the commonest of the two species. Mr. Ussher gives a long list of the counties in Ireland in which the Cormorant nests on the coast, and he says that several breeding colonies are to be met with on the islands of inland lakes, where they breed on trees, such as Lough Tawnyard in Co. Mayo, Lough Key in Roscommon, and Lough Cutra in Galway. In some of these, he says that the Cormorants breed in company with Herons in high trees.

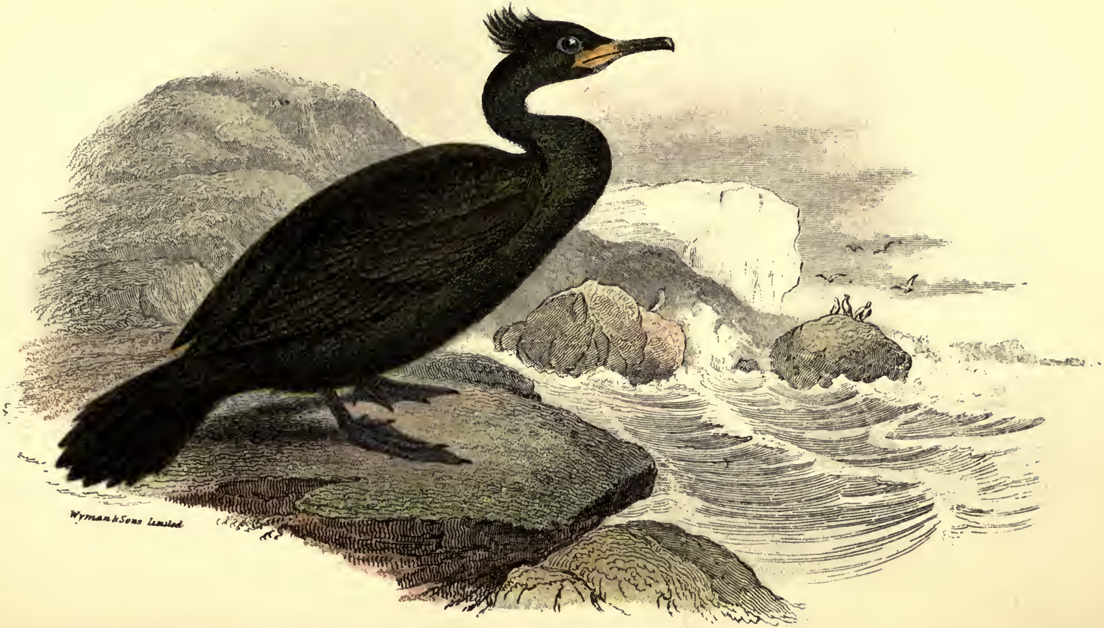
Range outside the British Islands.—The Cormorant is distributed in suitable localities throughout Europe and Northern Asia to Japan. It breeds in India and Burma, and is believed to extend to Australia and also to South Africa, but recently the species of Cormorant inhabiting the African continent has been considered to be different from *P. carbo*, and it is difficult to say what is the exact range of our Cormorant to the southward. It occurs in Arctic America on the Atlantic side, and ranges in winter as for south as New Jersey, but has not been recorded from the Pacific side of North America.

Habits.—The Cormorant is in most parts of England a sea-bird, frequently the rocky coasts and building its nest on the rocks, but in many places it builds on trees, in company. In other parts of its range it has been known to build its nest in reed-beds, and in pollard willows, while sometimes a colony of Cormorants will be found to occupy quite high trees, like Herons.

The food consists entirely of fish, of which the bird devours a great number, and the decaying carcases are plentifully strewn about the nesting-places, so that a visit to a Cormorant's home is generally trying to the olfactory sense. The mess which the birds make is also rather appalling, the whole of the rocks on which they breed having generally the appearance of having been whitewashed. On land the Cormorant is rather a sluggish bird, and is generally seen perched on a rock, where it will remain for hours digesting its food; but in the water it is a splendid swimmer and diver, employing its great webbed feet to singular advantage, and using its stiffened tail as a rudder to steer itself with, but not making much use of its wings. Although generally nesting in company, at other times of the year Cormorants are found on inland rivers, and many are thus obtained during the winter, most of these individuals being young birds, though old ones not unfrequently occur. One which was shot near Cookham, when I was a boy, was observed for several days swimming in the Thames, with its body submerged and only its head and neck protruding out of the water.

Nest.—A very rough structure of seaweed or sticks, which is added to year by year in places where the birds are allowed to nest without interference. The Cormorant seems to have some idea of decorating its nest, for Mr. Doncaster informed Mr. Seebohm that he found one in which the birds had pulled a long spike of foxglove and had twisted it round the nest as

PLATE LII.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SHAG.

a lining [illegible]
of sea-parsley [illegible]

Eggs.—Two [illegible]
green, but this [illegible]
ing, which can [illegible]
1·5–1·75.

II. [illegible]

Pelecanus gra[illegible]
Phalacrocora[illegible]
B. Eur. [illegible]
p. 106 ([illegible]
(1884); Se[illegible]
Man. Br. B[illegible]
xxii. (1892).

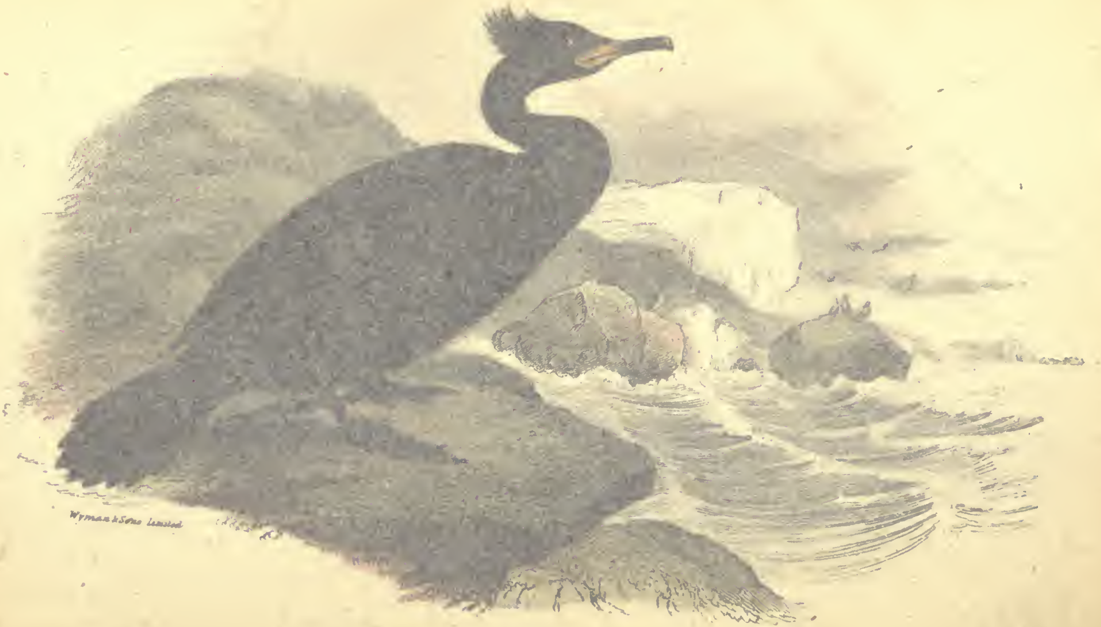
Adult Male.—[illegible]
bottle-green or [illegible]
velvety-black on [illegible]
parts having [illegible] bro[illegible]
"inside of mouth [illegible] skin [illegible]
naked skin of [illegible] thr[illegible]
feet and toes [illegible];
Grant). Total length, 2[illegible]
tail, 5·5; tarsus, [illegible]

Adult Female.—Similar to [illegible]
wing, 10·5.

Young Birds.—Brown a[illegible]
edged with darker brow[illegible]
turns to whity-brown, [illegible]
whity-brown; sides of [illegible]
the throat white, and [illegible]
feet and toes reddish. [illegible]
tinguished from young [illegible]
and they are browner [illegible]

The black plumage [illegible]
accomplished by a [illegible]

PLATE LII.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SHAG

a lining. There is also generally a lining of fresh green leaves of sea-parsley or some other plant, according to Mr. Seebohm.

Eggs.—Two or three in number. The ground-colour is green, but this is generally obscured by a chalky-white covering, which can be scraped off. Axis, 2·4–2·8 inches; diam., 1·5–1·75.

II. THE SHAG. PHALACROCORAX GRACULUS.

Pelecanus graculus, Linn. S. N. i. p. 217 (1766).
Phalacrocorax graculus, Macg. Br. B. v. p. 392 (1852); Dresser, B. Eur. vi. p. 163, pl. 389 (1879); B. O. U. List Br. B. p. 106 (1883); Saunders, ed. Yarr. Br. B. iv. p. 151 (1884); Seebohm, Br. B. iii. p. 656 (1885); Saunders, Man. Br. B. p. 351 (1889); Lilford, Col. Fig. Br. B. part xxii. (1892).

(*Plate LII.*)

Adult Male.—General colour above and below black, with a bottle-green or oily-green gloss, all the feathers margined with velvety-black on the mantle, scapulars, and wing-coverts, these parts having also a bronzy reflection; tail-feathers *twelve;* "inside of mouth and skin round the gape pale orange-yellow; naked skin of chin and throat black, thickly dotted with yellow; feet and toes blackish; iris bright green" (*W. R. Ogilvie-Grant*). Total length, 27 inches; culmen, 2·5; wing, 11·0; tail, 5·5; tarsus, 2·35.

Adult Female.—Similar to the male. Total length, 26 inches; wing, 10·5.

Young Birds.—Brown above, glossed with green, the feathers edged with darker brown, which becomes much abraded and turns to whity-brown, the tail-feathers being margined with whity-brown; sides of face and under surface of body brown, the throat white, and the lower abdomen also dingy-white; feet and toes reddish. The young Shags can always be distinguished from young Cormorants by their *twelve* tail-feathers, and they are browner underneath.

The black plumage is assumed in the first spring, and is accomplished by a gradual darkening of the feathers of the under surface, as well as by a complete moult of some of the feathers, the quills being entirely renewed.

Nestlings.—At first completely bare and of a sooty lead-colour, afterwards densely covered with sooty-brown down.

In the winter the Shag puts on a crest, which is shed, like the ornamental filaments of the Cormorant, by the time the nesting commences in April, but Lord Lilford says that he has shot specimens in August on the coast of Cornwall which still showed remains of a crest, while in the Mediterranean he never found a Shag with a crest at any season. This would go to prove that the Shag of the Mediterranean is a different species from that of Northern Europe, as has been insisted upon by Professor Brusina, who has named the crestless Shag *Phalacrocorax croaticus*, but if really different, it will have to bear the older name of *P. desmaresti.*

Range in Great Britain.—In many parts of England the Shag is more plentiful than its larger ally. It occurs on all our rocky coasts, being more abundant on the western side of England and Scotland, especially on the rocky shores of Wales and in the western isles. In Ireland Mr. Ussher says that it breeds in all the maritime counties frequented by the Cormorant; but on the coasts of Galway and Mayo it appears to be much more numerous than that species.

Range outside the British Islands.—The Shag is a bird of Western Europe, for, though it is common on the coasts of Norway and breeds in the Færoes, it has not been met with farther west than Iceland, and is almost unknown in the Baltic, being rare along the shores of the North Sea. It becomes commoner, however, on the Atlantic coasts of France and Portugal, and if *P. desmaresti* should prove to be only *P. graculus* in its crestless stage, then the range of the Shag will extend throughout the Mediterranean.

Habits.—The Shag is essentially a maritime species and is not met with on inland waters, though it does occasionally occur. It feeds entirely on fish and is a capital swimmer and diver, and that it can descend to a great depth is shown by the fact that it has been caught in a crab-pot lying twenty fathoms down. Lord Lilford has given a most interesting account of his visits to some of the breeding-places of the Shag in the

Mediterranean, from which I make the following extract, as it will give the reader a good idea of the habits of these birds. "A Shag-cavern, when numerously tenanted during the breeding season, is, although most interesting to a naturalist, indeed a gruesome, and, as a Highlander would say, 'no a wholesome' place. On pushing into one of these caves in a boat, the smell of decaying fish is almost overpowering; a rush of great dark birds comes forth above, on both sides, and often almost into the arms and faces of the intruders (we always 'backed' in), whilst many of the Shags plunge headlong from the ledges into the sea, and dive under the boat.

"The real way to see the interior in all its weird horror, was to illuminate its recesses by a blue light, when in all probability many old Shags might be discovered still on their nests or on the ledges, twisting their long necks with extraordinary contortions, dazed by the light, and uncertain whether to go or to 'stand by' their young. However they might decide this question, *we* generally found the stench so horrible, that, after taking in the scene, we were glad to beat a speedy retreat and chase any young Shag that might have taken to the sea and be unable to fly, with a view to capturing him alive—an attempt that, in my experience, was invariably a failure, for, although we could often have killed these youngsters, had we been so minded, with oars or boat-hook, they always managed to dive and conceal themselves amongst the boulder-stones and seaweed at the foot of the rocks."

In Great Britain also the Shags prefer to nest in a cave, when such is available, and they will occupy every ledge with their nests when they find a suitable cavern. In other places, where there are no caves, they nest on ledges of cliffs, and, like that of the Cormorants, the position of the breeding-place is easily discernible from the way in which the cliffs are whitewashed. The flight of the Shag is powerful and rapid, and it may often be seen skimming along above the level of the water. When about to dive, the bird raises itself up and disappears with a curve and a dip. It is said to use its wings as well as its feet under the water, but the Shags which I have watched in confinement seemed not to use their wings at all, but to depend upon their feet alone to propel them. When a fish is caught, they return to the surface of the water to swallow it.

Nest.—A bulky and rough structure of sticks or seaweed, with sometimes a little straw, &c.

Eggs.—Three or four in number, but often only two are laid. They resemble those of the Cormorant and have the same chalky covering to the shell, but are somewhat smaller. Axis, 2·3–2·6 inches; diam., 1·35–1·5 inches.

THE GANNETS. SUB-ORDER SULÆ.

The Gannets are very closely allied to the Cormorants, and like them have all the four toes joined together by a web, which gives them great swimming and diving powers. In osteological and anatomical characters they are also very similar to the Cormorants, but the bill is nearly straight and only slightly deflected at the tip, not being hooked as in *Phalacrocorax*. They have a small gular sac, which is for the most part bare. As in the Cormorants, the feet are placed far back and the tarsus alone is bare. The changes of plumage undergone by the Gannets is, however, quite different to that of the Cormorants. Gannets are found all over the world, but do not go very far to the north or south.

THE TRUE GANNETS. GENUS DYSPORUS.

Dysporus, Illiger, Prodr. p. 279 (1811).

Type, *D. bassanus* (L.).

I. THE GANNET. DYSPORUS BASSANUS.

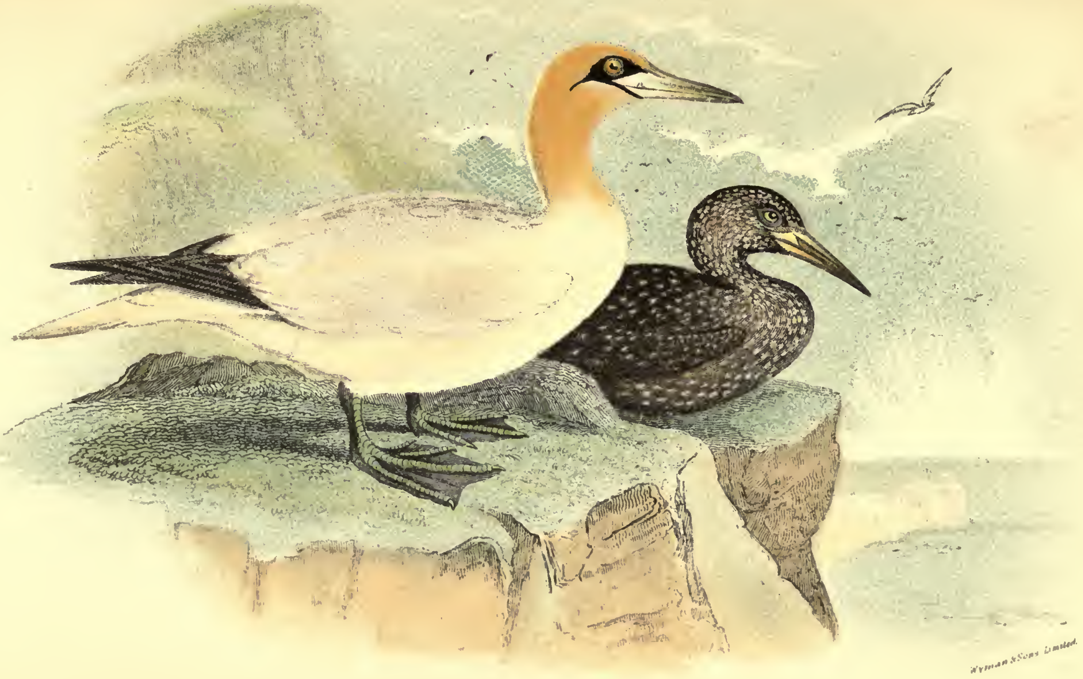
Pelecanus bassanus, Linn. S. N. i. p. 217 (1766).

Sula bassana, Macg. Br. B. v. p. 405 (1852); Dresser, B. Eur. vi. p. 181, pl. 392 (1880); B. O. U. List Br. B. p. 106 (1883); Saunders, ed. Yarr. Br. B. iv. p. 155 (1884); Seebohm, Br. B. iii. p. 643 (1885); Saunders, Man. Br. B. p. 353 (1889); Lilford, Col. Fig. Br. B. part xii. (1890).

(*Plate LIII.*)

Adult Male.—General colour above and below pure white, with a tinge of ochreous-buff on the head and neck; bastard-wing, primary-coverts, and primary-quills black; tail-feathers white, with yellowish shafts; bill pale bluish-grey, tinged with

PLATE LIII.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GANNET.

green at the base; bare space round the eyes, lines on the bill, and gular space black; feet brownish-black, the scales light greenish-blue or emerald-green; claws greyish-white; iris pale yellowish-white. Total length, 33 inches; culmen, 3·85; wing, 18·4; tail, 8·3; tarsus, 2·1.

Adult Female.—Similar to the male.

Young Birds.—When first hatched the nestlings are bare and slaty-black in colour, with the bill and naked region of the eye black. As they progress they become covered with dense white down. The full plumage of the young bird is greyish-brown, spotted with white, each feather having a triangular spot at the end, these spots being very numerous on the head and neck; the bastard-wing, primary-coverts, and quills are blackish, rather more ashy on the inner webs, the innermost secondaries tipped with white; tail-feathers black, with white shafts; throat greyish-brown, spotted with white like the upper surface; remainder of under surface of body dull white, mottled with ashy-grey, with which colour the feathers are tipped; under wing-coverts blackish, spotted with white. After the second moult they become more uniform below, and the head and neck are mottled with white, and, according to Mr. Seebohm, the white colour gradually predominates after the third and fourth moults, until the full white plumage is assumed after the fifth moult.

Range in Great Britain.—Although the Gannet occurs on all our coasts, the breeding-places are confined to a few colonies, the only one in England being on Lundy Island, but another exists on the island of Grassholme, off the Pembrokeshire coast. In Scotland the best-known places are Ailsa Craig and the Bass Rock; and other breeding colonies are at Boreray in the St. Kilda group, Sulisgeir or North Barra, and the stack of Suleskerry, about forty miles west of Stromness. These are all the places mentioned by Mr. Howard Saunders in his latest work. In Ireland, Mr. Ussher says, the principal breeding-place of the species is the Little Skellig, off Kerry, but a considerable colony also exists on the Bull Rock, off Cork, as was recorded in 1868; and notwithstanding that a lighthouse has now been erected there since 1884-85, the number of nests is estimated at from one hundred and eighty to two hundred by the light-keepers, who think that the birds are increasing in numbers.

Range outside the British Islands.—As in our own islands, the breeding-places of the Gannet are confined to a few localities, which are in the Western Færoes, in Iceland, and again on the Magdalene Islands and other rocky islets in the Gulf of St. Lawrence, on the Atlantic side of North America. The species wanders south in winter, and reaches as far as the Mexican coast in America, and to North Africa and Madeira, but its southern limits in winter are not well known, and it would appear to be represented by distinct species of the genus in all the southern continents.

Habits.—The Gannet is entirely maritime, and is only found inland when driven by stress of weather and exhausted. It lives entirely on fish and destroys a large number of herrings and other surface-feeding species, falling on them from a height in the air, as it does not dive like a Cormorant. Except in the winter, when single specimens are met with on our coasts, the Gannet is a gregarious bird, nesting and fishing in company, and some idea of the number of the latter may be gained from the figures given by Mr. Seebohm, who reckons that on Sulisgeir there are one hundred and fifty thousand pairs, on the Stack of Suliskerry twenty-five thousand pairs, and the same number on Boreray. On the Bass Rock and Ailsa Craig he puts the numbers at about six thousand pairs on each. When feeding in company, as they do, many birds are caught in the fishing-nets.

The flight of the Gannet is decidedly grand, as the bird swoops along at a prodigious rate, one flap of the wings seeming sufficient to carry it for a great distance. At first appearing as a speck on the horizon, I have known one of these birds to pass over my boat in a space of time almost incredible ; but the long pointed wings have a way of swinging it through the air, so that in a few seconds the great bird looms up close, and in a few more is out of vision behind the next headland. Sometimes the Gannets soar to a great height and wheel round and round, seldom settling on the water except to digest their food or to sleep. They are capable of traversing long distances, and often go a long way from their breeding-stations in search of food.

Eggs.—Only one. The ground-colour is bluish, but is obscured by a chalky covering as in the case of the Cormorants. Mr. Robert Read, to whom I am indebted for many interesting notes on British birds, writes to me:—"I have taken many eggs on Ailsa Craig. Some of them are perfectly black with stains from the birds' feet, but if a Gannet's egg be soaked in warm water and well scrubbed with a hard brush, all the chalky coating can be removed, and there is then present a beautifully clear-looking bluish egg, in texture and appearance much resembling that of a Heron. The birds, when sitting hard, hiss like a common Goose, and require a lot of stirring up to make them leave their eggs." Axis, 2·85–3·3 inches; diam., 1·8–2·0.

THE FLAMINGOES.

ORDER PHÆNICOPTERIFORMES.

Judged by their long legs and general appearance, the Flamingoes would appear to be a kind of aberrant Stork, and there are not wanting naturalists who consider them to be more of a Stork than a Duck; but, weighing the whole of the characters, the balance in favour of their affinity to the Ducks is incontestable, and two characters seem to point to their true affinity, viz., the possession of lamellæ on the edge of the bill, and the downy young, which are able to run about and feed themselves soon after being hatched. No Stork has these characteristics, and therefore, if the Flamingo has certain Stork-like characters, the weight of evidence is in favour of its being a Stork-like Duck, and I place these birds in my system of classification between the Storks and the Ducks (cf. Sharpe, Classif. B. p. 76). The outward structure of a Flamingo, with its long legs and its peculiar bent bill and long neck, is sufficient to distinguish the bird from any other member of the British avifauna, while there are several osteological characters by which the Flamingoes can be distinguished. As, however, the birds concern the British fauna but little, there is no need to enlarge on the minute characters of the group, the external ones being sufficient to distinguish a Flamingo at a glance.

THE TRUE FLAMINGOES. GENUS PHÆNICOPTERUS.

Phœnicopterus, Linn. Syst. Nat. i. p. 230 (1766).

Type, *P. ruber*, Linn.

The Flamingoes are divided by Count Salvadori into three genera, *Phœnicopterus*, *Phœniconaias*, and *Phœnicoparrus*. The latter is confined to the Andes of Chili and Peru, the second to Africa and North-western India, while the genus *Phœnicopterus* is found throughout the greater part of the tropical Old World, with the exception of the Australian Region, and occurs again in the Neotropical Region.

I. THE COMMON FLAMINGO. PHÆNICOPTERUS ROSEUS.

Phœnicopterus roseus, Pall. Zoogr. Rosso-Asiat. ii. p. 207 (1811); Dresser, B. Eur. vi. p. 343, pl. 410 (1879); Saunders, ed. Yarr. Brit. B. iv. p. 244 (1884); id. Man. Br. B. p. 383 (1889).

Adult Male.—White, with a rosy tinge, especially on the tail; upper wing-coverts bright scarlet; quills black, with the innermost secondaries rosy; under surface white with a rosy tinge, the under wing-coverts and axillaries bright scarlet; bare skin near the eye and base of bill fleshy-pink; end of bill and edges of the lower mandible black; legs and feet pinkish-red; iris pale lemon-yellow. Total length, 50 inches; culmen, 5·5; wing, 17·0; tail, 7·0; tarsus, 13·0.

Adult Female.—Similar to the male, but a little smaller.

Young Birds.—Brown above, with darker central streaks on the feathers; the head and neck whitish, tinged with buff, especially on the upper neck; under surface of body whitish, with a tinge of buff, the axillaries pale pink; base of bill dull pink; legs dull lead-colour.

Nestling.—Covered with white down, greyer on the back; *the bill quite straight.*

Range in Great Britain.—Flamingoes are so often kept in captivity in our Zoological Gardens and in private aviaries, that it is quite possible that an individual occasionally escapes, which may account for the odd specimens which have been shot in England. Three instances, however, of the capture of the

Flamingo in England are undoubted, and no evidence has been forthcoming that in any of the cases they were escaped birds. The first was taken in Staffordshire, in September, 1881, and another was shot near Beaulieu in Hampshire, in November, 1883, having been flying about for a fortnight after a great gale from the south-west, which may have driven the bird to our shores. Another was seen in the Hoy, near New Romney in Kent, in August, 1884, by Captain Shelley; and the old sportsman must have imagined himself back in Egypt, when he saw a Flamingo flying past him on the Kentish coast. Another was shot in the Isle of Sheppey, in August, 1873, but Mr. Howard Saunders thinks that this may have been an individual which escaped from the Zoological Gardens on the 19th of July in the same year. Although we now look upon the occurrence of a Flamingo in England as something extraordinary, palæontologists show that in ancient times they were common enough in Central Europe, and even in the South of England.

Range outside the British Islands.—The Flamingo is a bird of Southern Europe, whence it extends eastwards from the Mediterranean to Lake Baikal in Eastern Siberia, and it is also found breeding in India, and extends to Ceylon, as well as all over Africa. It has been observed occasionally in Switzerland, and on the Rhine it has been seen in flocks.

Habits.—The Flamingo breeds in the salt-marshes of the Camargue in Southern France, and in Southern Spain and other suitable localities in Southern Europe and the Caspian district. The nest is made of mud, and the bird sits on it with its long legs doubled up under it, and its neck twisted round, so as to rest on its back. The eggs are two in number, and are of a chalky-white. Axis, 3·55–3·7 inches; diam., 1·15.

THE GEESE, SWANS, AND DUCKS.

ORDER ANSERIFORMES.

The members of this Order have a bridged, or desmognathous, palate, and their downy young are able to run about in a few hours. Besides these characters, which Mr. Seebohm believes to be thoroughly diagnostic of the Order, there are many others, chiefly anatomical, which distinguish the Ducks and Geese.

They may be said to be absolutely cosmopolitan in their range, and no country is without them, as far as we know.

I am indebted to Count Salvadori, who is engaged on the twenty-seventh volume of the "Catalogue of Birds in the British Museum," for giving me his scheme of classification of the *Anseres* for the benefit of the present volume; and every one who knows the excellence of that author's work will understand that his advice has been of material assistance to me. I have mainly followed the order of Mr. Howard Saunders "Manual" for the British species, which varies but little from that adopted by the Count. My Order *Anseriformes* is equivalent to the Family *Anatidæ* of Count Salvadori, who divides the Family into eleven Sub-families; with some of which, being exclusively tropical forms, we need not concern ourselves further in the present work. Following, therefore, as nearly as possible, Count Salvadori's system, and merely altering the order of the Geese and Swans, we find that he divides the *Anatidæ* into three divisions, depending on the presence or absence of a lobe on the hind-toe. Geese and Swans have no lobe, the True Ducks have only a very narrow one; while the Diving Ducks and the Mergansers have a broad lobe.

THE GEESE. SUB-FAMILY ANSERINÆ.

As already mentioned, the Geese are distinguished by the absence of a lobe on the hind-toe, which is moderately large; the bill is stout and high at the base, and there is no cere. They differ from the majority of Ducks in not having any metallic colours in the plumage and no "wing-speculum."

The typical "Grey" Geese are mostly birds of the northern parts of the Eastern and Western Hemispheres, the most southern species being *Anser indicus*, which inhabits Central Asia and the Indian Peninsula, and *Nesochen sandwichensis*, which is confined to the Sandwich Islands. All the species of "Black" or Brent Geese are birds of the Arctic Regions, and occur in temperate latitudes chiefly in winter. In the Southern Hemisphere their place is taken by the Kelp Geese (*Cloephaga*) of South America and the Maned Goose (*Chenonetta*) of Australia.

Four species of Geese have been recorded as British, which are now very properly dropped out of the list, viz., the Spur-winged Goose (*Plectropterus gambensis*), the Canada Goose (*Bernicla canadensis*), and the Bar-headed Goose (*A. indicus*). All these birds are kept in confinement in this country, and there can scarcely be a doubt that the specimens which have been shot were simply escaped birds.

THE SNOW-GEESE. GENUS CHEN.

Chen, Boie, Isis, 1829, p. 563.
Type, *C. hyperboreus* (Pall.).

The genera of the Geese are separated by Count Salvadori according to the character of the serrations on the cutting-edge of the upper mandible, and the outline of this tomium, or cutting-edge. Thus the genera *Chen* and *Anser* have the latter decidedly sinuated, or concave, with the serrations visible from the outside for the greater part of its length. The species of the genus *Chen* are remarkable for a very stout bill, and for their snow-white or bluish colour, with black wings. The genus is arctic in its habitat.

I. THE SNOW-GOOSE. CHEN HYPERBOREUS.

Anser hyperboreus, Pall. Spiz. Zool. vi. p. 25 (1767); Seeb. Br. B. iii. p. 490 (1885).
Anser albatus, Cass.; Saunders, P. Z. S. 1871, p. 519.
Chen albatus (Cass.), Dresser, B. Eur. vi. p. 409, pl. 417, fig. 2 (1873); B. O. U. List Br. B. p. 117 (1883).
Chen hyperboreus, Saunders, ed. Yarr. Br. B. iv. p. 275 (1885); id. Man. Br. B. 393 (1889); Lilford, Col. Fig. Br. B. part xxvi. (1893).

Adult Male.—General colour above and below snowy-white, the bird being everywhere pure white except on the wings; primary-coverts ashy-grey; primaries black, slightly washed with ashy at the base; "bill purplish-red, the nail whitish, and the intertomial space black; feet purple or orange-red, the soles dingy-yellow; iris dark brown, eyelids whitish" (*R. Ridgway*). Total length, 26·0 inches; culmen, 2·1; wing, 16·6; tail, 5·5; tarsus, 2·8.

Adult Female.—Similar to the male. Total length, 28·0 inches; wing, 16·3.

Young Birds.—Greyish above, the feathers edged with ashy-brown; the crown of the head and the centre of the back of the neck brown; forehead and sides of face ashy-white, slightly tinged with yellowish-buff; under surface of body white, greyish on the fore-neck and chest; the scapulars brown like the back, with ashy bases; lesser wing-coverts white, powdered with grey; the median and greater coverts ashy-grey, with white edges, the amount of white varying greatly on the latter series; bastard wing-feathers grey; primary-coverts and quills as in the adult birds; the secondaries ashy-brown, edged with white, and having the greater part of the inner webs white; inner secondaries dark slaty-brown, with broad white edges to both webs; tail-feathers white, powdered with ashy-brown.

Range in Great Britain.—Of accidental occurrence only. The first instance of the capture of this species was made known by Mr. Howard Saunders, who noticed two young Snow-Geese in Leadenhall Market on the 9th of November, 1871, and he came at once to tell me of his interesting discovery. We returned forthwith to the market and purchased the pair, and Mr. Saunders, having procured from the salesman the name of his correspondent, enlisted the aid of the late Sir Victor Brooke, who was then in Ireland, and by this means the clue was followed up, and it was ultimately discovered that the two Geese had been shot a few days previously on the lake of Tacumshane in Co. Wexford. A third was shot soon after in Wexford Harbour, but was not preserved. In October, 1877, a flock of seven was seen near Belmullet in Co. Mayo, and two were captured. On the 22nd of August, 1884, an adult Snow-Goose was seen by the Rev. H. A. Macpherson on the coast near Allonby in Cumberland. Others have since been noticed in Yorkshire, in 1891.

Range outside the British Islands.—The home of this beautiful bird is in the Arctic Regions of North America, but the species probably occurs in Eastern Siberia. It breeds in Western Arctic America, and migrates in winter to Japan, and in America down the Mississippi Valley and to Southern California. It has been observed in various parts of Northern Europe. A large eastern form, *Chen nivalis* (Forst.; Salvad. Cat. B. xxvii. p. 86), is found in the United States on migration, and reaches the Bermudas. Its breeding-home is not yet known, but is believed to be in Arctic America to the east of the Mackenzie River. This large race only differs from the true *C. hyperboreus* in size, and it is extremely doubtful if it can be separated from the latter bird specifically.

Habits.—Nothing particular has been recorded of the habits of the Snow-Geese in their arctic home, where they frequent the tundras, or barren ground, feeding on grass and insects, and in the autumn on berries.

Nest.—A hollow in the ground, lined with down.

Eggs.—Dirty white in colour, and usually five in number. Axis, 3·15–3·4 inches; diam., 2·05–2·2.

THE TRUE GEESE. GENUS ANSER.

Anser, Briss. Orn. vi. p. 261 (1760).

Type, *A. anser* (L.).

The true Geese are found in the northern parts of the Old and New Worlds, breeding in the high north, and migrating south in winter. Four species occur in the British Islands, and they are not always easy to distinguish, but they have been very clearly differentiated by Mr. Howard Saunders in his "Manual" and by Count Salvadori in the "Catalogue of Birds." The nail at the end of the bill is white in *A. anser* and *A. albifrons*, and blackish in *A. fabalis* and *A. brachyrhynchus*, and the colours of the bill and feet are usually distinctive characters, but too much stress must not be laid on these points, as they do not always hold true, while possibly some hybridisation takes place among the Geese, which may account for the appearance of the characters of one section unexpectedly among birds of the other section.

I. THE GREY LAG-GOOSE. ANSER ANSER.

Anas anser, Linn. S. N. i. p. 197 (1766).
Anser ferus, Macg. Br. B. iv. p. 589 (1852); Salvad. Cat. B. Brit. Mus. xxvii. p. 89 (1895).

Anser cinereus, Meyer; Dresser, B. Eur. vi. p. 355, pl. 411 (1878); B. O. U. List Br. B. p. 115 (1883); Saunders, ed. Yarr. Br. B. iv. p. 253 (1885); Seebohm, Br. B. iii. p. 500 (1885); Saunders, Man. p. 385 (1889); Lilford, Col. Fig. Br. B. part xxvi. (1893).

Adult Male.—General colour above light brown, with ashy centres to the feathers and whity-brown margins; the lower back, rump, and upper tail-coverts lavender-grey; wing-coverts like the back, but the lesser series, as well as the coverts round the bend of the wing, light bluish-grey, with which colour the median and greater coverts are tinged; bastard-wing bluish grey, with somewhat broader white margins, and shaded with brown; primary-coverts grey; primaries blackish, with white shafts, the outer ones grey for a considerable portion of their length; the secondaries blackish-brown, narrowly edged with white; the inner secondaries browner, like the back; sides of rump and long upper tail-coverts white; centre tail-feathers ashy-brown, edged and tipped with white, the remainder blackish on the outer web and at the base, the dark colour disappearing towards the outermost, which are white; head and neck light brown, the feathers of the hind-neck somewhat lanceolated and forming a soft ruff; sides of face light ashy-brown, with a narrow line of white fringing the base of the upper mandible; under surface of body white, the throat and chest ashy-grey, with whitish margins to the feathers; the breast and abdomen slightly mottled with black; thighs grey; sides of body brown, with whity-brown margins to the feathers; under wing-coverts and axillaries light lavender-grey; bill flesh-coloured, with the nail white; feet flesh-colour; iris light brown. Total length, 30·0 inches; culmen, 2·6; wing, 17·8; tail, 7·0; tarsus, 3·2.

Adult Female.—Similiar to the male but smaller. Total length 30·0 inches; wing, 16·0.

Young Birds.—Darker than the adults and having no black on the under-parts.

Characters.—The white nail at the end of the bill distinguishes this species, as well as the absence of any conspicuous white on the forehead, combined with the light grey of the rump. The flesh-coloured bill and feet are also characteristic.

Range in Great Britain.—Although formerly nesting in Lincolnshire, the breeding-places of this Goose are now confined to Scotland, where it still rears its young in Ross, Caithness, and Sutherland, as well as in the Hebrides, where it is still abundant on some of the outer isles. It is not mentioned by Mr. Ussher as a breeding-species in Ireland. In winter the Grey Lag-Goose occurs in flocks in other localities in Great Britain, but seldom on either the east or west coast of England.

Range outside the British Islands.—To the southern counties of Europe this species only comes as a winter visitor, but in Russia, and locally in Central and Northern Europe, it is generally distributed in summer. In Siberia its place is taken by a nearly allied species, *A. rubrirostris* of Hodgson, which winters in India and China. This, according to Count Salvadori, is a somewhat larger bird, with heavier bill and feet, and has more black on the under-parts—poor characters for separation, but from the series in the British Museum I am able to say that they are fairly well marked. The bill is said by Dr. Radde to be flesh-coloured, but with the base of the upper mandible bright red, in the eastern form.

Habits.—Many people think that the name of "Grey-lag," as it is generally written, is a vernacular corruption of "Grey-leg," which, as the bird has flesh-coloured feet, would be a misnomer; but it is now recognised that the name should be written Grey "Lag-Goose," indicating the goose that "lagged" behind to breed in the fens of Lincolnshire in former times. When unmolested, the present species feeds all day, retiring at night-time to secluded places on the sea-shore, or wherever it can rest without molestation. Its food consists of various water-plants, grass, and grain, in pursuit of which it is to be found on stubble-lands. The curious feature which is common to most Geese, of a very rapid moult, renders the birds practically defenceless at this period of their existence, and they then either hide themselves when inland, or take to the water for protection from assault when they are no longer able to fly. At other times they fly strongly and well, and generally take the form of a V when flying in flocks or small parties.

Nest.—The Grey Lag-Goose is a somewhat early breeder, nesting in March in Germany, and in Scandinavia in May. The nest is a large, roughly-made structure, composed of dead reeds, grass, and sedge, with sometimes a stick or two added. Mr. Seebohm says that the nest is often a foot high and a yard across, and "in cold climates is generally lined with moss, to which down is added, as the eggs are laid."

Eggs.—From five to six in number; pure white, but soon getting discoloured to a creamy-white, some of the eggs appearing also to be naturally of a dirty yellowish-white colour. Axis, 3·25–3·55 inches; diam., 2·1–2·55.

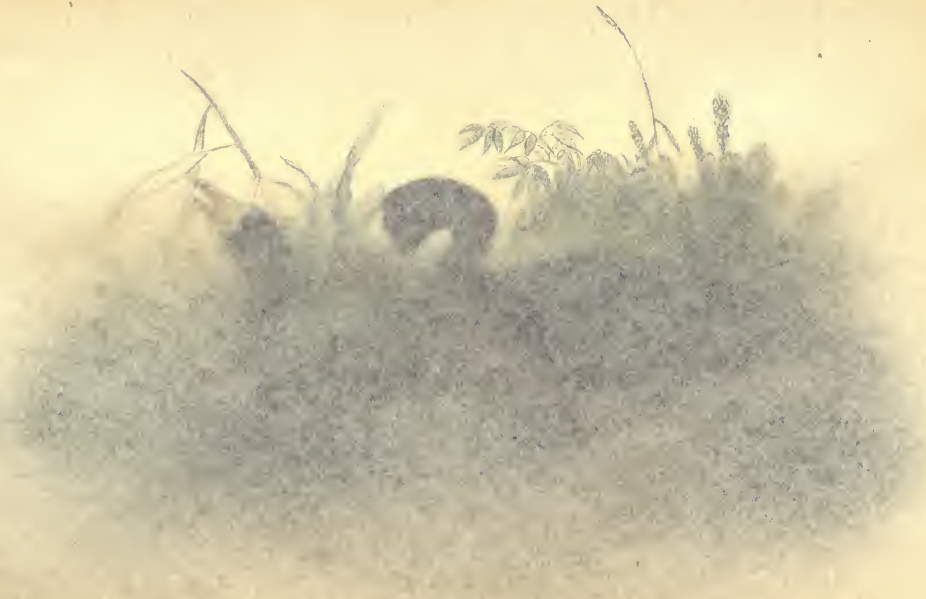
II. THE WHITE-FRONTED GOOSE. ANSER ALBIFRONS.

Branta albifrons, Scop. Ann. I. Hist. Nat. p. 69, No. 87 (1769).

Anser albifrons, Macg. Br. B. iv. p. 609 (1852); Dresser, B. Eur. vi. p. 375, pl. 414 (1878); B. O. U. List Br. B. p. 116 (1883); Saunders, ed. Yarr. Br. B. iv. p. 261 (1885); Seebohm, Br. B. iii. p. 505 (1885); Saunders, Man. Br. B. p. 387 (1889); Lilford, Col. Fig. Br. B. pt. x. (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 92 (1895).

(*Plate LIV.*)

Adult Male.—General colour above resembling that of *A. anser*, but darker, especially as regards the lower back and rump, which are dark slaty-grey, instead of light bluish-grey; the grey on the wings is also darker than in *A. anser*, and the outer greater coverts especially are greyer, with broader white margins; a white mask extends from the base of the mandible across the forehead, but does not reach to the line of the eyes and is separated from the brown of the head and face by a shade of black; under surface of body as in *A. anser*, but much more extensively marked with black; bill orange-yellow, with a white nail at the tip; feet and toes orange; iris dark brown. Total length, 30·0 inches; culmen, 1·75; wing, 16·0; tail, 6·0; tarsus, 2·65.



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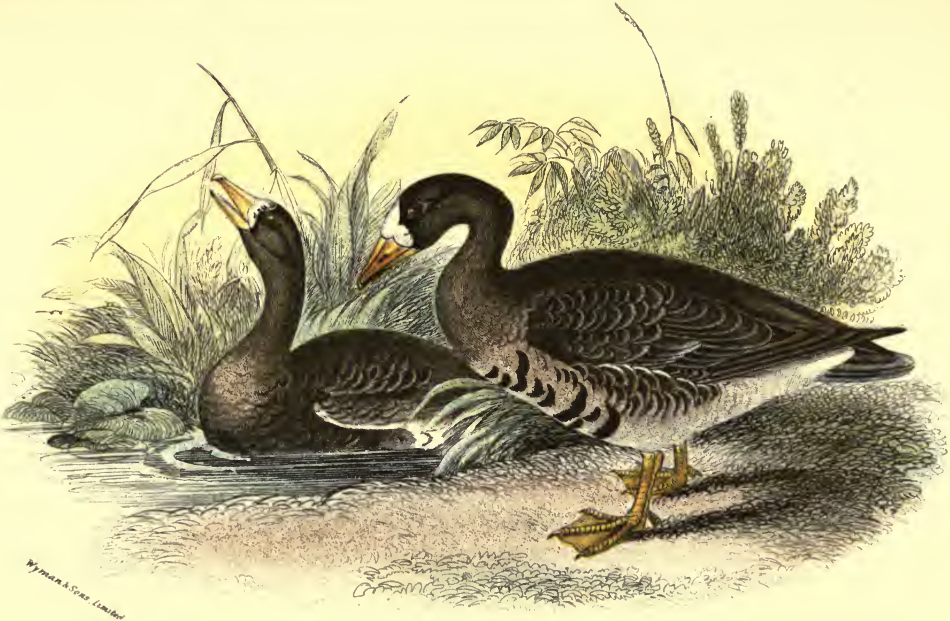
(Plate LIV.)

Adult Male.—General colour above resembling that of *A. anser*, but darker, especially as regards the lower back and rump, which are dark ashy-grey instead of light bluish-grey; the grey on the wings is also darker than in *A. anser*, and the outer greater coverts [illegible] with broader white margins; a white mark extends from the base of the mandible across the forehead, but does not reach to the line of the eyes and is separated from the brown of the head and face by a shade of black; under surface of body as in *A. anser*, but much more extensively marked with black; bill orange-yellow, with a white nail at the tip; feet and toes orange; iris dark brown. Total length, 30·0 inches; culmen, 1·75; wing, 16·0; tail, 6·0; tarsus, 2·65.

PLATE LIV.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WHITE-FRONTED GOOSE.

Adult Female.—Similar to the male, but a little smaller. Total length, 26·0 inches; wing, 15.

Young Birds.—Darker and more uniform in colour than the adults, and the nail at the end of the bill is brown; the under surface is more uniform, without any black patches or bars.

Characters.—The White-fronted Goose is a smaller bird than the Grey Lag-Goose, and has an orange-coloured bill with a white nail at the tip. The white forehead also easily distinguishes it, when adult, though it should be noted that, in our figure, the white is rather more extended than it should be.

Range in Great Britain.—This Goose does not breed within our limits, and is only a winter visitant, with a somewhat curious distribution, as is detailed by Mr. Howard Saunders and Mr. Seebohm. It occurs somewhat sporadically, and is rare on the east coasts of both England and Scotland, is commoner in Ireland. On the west coast of Scotland it is a rare visitor, as a rule, and on the Outer Hebrides is only an occasional visitor, but on Islay is said to be the most common of all the Grey Geese.

Range outside the British Islands.—The European form of the White-fronted Goose breeds in the high north, from Greenland and Iceland to Central Siberia, as Mr. Seebohm found it on the Yenesei, and he states that it passes farther to the north to breed than either the Bean-Goose or the Grey Lag-Goose. In America a large form, *A. gambeli*, is found, which can only be considered a slightly larger race of our *A. albifrons*, and this race breeds in Arctic America and goes south in winter, as does the true *A. albifrons*, which in the cold season occurs throughout Europe, and even winters in North-western India and China.

Habits.—The same as those of the Grey Lag-Goose. Mr. Seebohm says that the notes are somewhat similar to those of the last-mentioned species, but are more trumpet-like in tone, and more rapidly repeated, so that it has sometimes been called the Laughing Goose. He remarks further:—"In other respects the habits of the White-fronted, Bean, and Grey Geese are so similar that the description of one might almost pass for that of the others."

Nest.—Described by Middendorf as placed on a grassy hillock, in a hollow abundantly lined with down. Other observers state that the American form makes sometimes only a depression in the sand, or lines the nest with grasses and feathers as well as down.

Eggs.—From five to seven in number, though as many as ten have been found. They are dull yellowish-white. Axis, 3·0–3·3 inches; diam., 2·0–2·2.

III. THE BEAN-GOOSE. ANSER FABALIS.

Anas fabalis, Lath. Gen. Syn. Suppl. i. p. 297 (1787).
Anas segetum, Gm. S. N. i. p. 512 (1788).
Anser segetum, Macg. Br. B. iv. p. 595 (1852); Dresser, B. Eur. vi. p. 363, pl. 412 (1879); B. O. U. List Br. B. p. 115 (1883); Saunders, ed. Yarr. Br. B. iv. p. 265 (1885); Seebohm, Br. B. iii. p. 493 (1885); Saunders, Man. p. 389 (1889); Lilford, Col. Fig. Br. B. part xxvi. (1893).
Anser fabalis, Salvad. Cat. B. Brit. Mus. i. p. 100 (1895).

Adult Male.—General colour above brown, with whity-brown edges to the feathers; the lower back and rump dull slaty-blackish; the sides of the rump and upper tail-coverts white; the tail-feathers blackish, edged and tipped with white; the wing-coverts dark slaty-grey, the inner ones, as well as the median and greater coverts, brown, rather broadly edged with white, like the inner secondaries; the bastard-wing and primary-coverts grey; primaries black externally, grey for the most part; secondaries black, with broad white edges; head and neck brown, with a little trace of white at the base of the upper mandible and along the base of the forehead; the neck-feathers soft and lanceolate; under surface of body greyish-white; throat brown, and with a brown shade overspreading the fore-neck; the sides of the body mottled with ashy or dark brown feathers, which are broadly edged with whity-brown; thighs ashy-brown; under wing-coverts dark slaty-grey, the axillaries more blackish; bill black, with an orange band in the middle; nail black; feet orange; iris dark brown. Total length, 30·0 inches; culmen, 2·5; wing, 18·0; tail, 5·4; tarsus, 3·1.

Adult Female.—Similar to the male, but a little smaller.

Young Birds.—Darker than the adults, with a tinge of tawny-buff about the neck.

Characters.—Distinguished by the black nail at the end of the bill, the orange feet, and orange band across the middle of the bill.

Range in Great Britain.—The Bean-Goose does not breed with us, but is a visitor in autumn and spring, and occurs throughout the winter on most parts of the coasts, though in some localities it is much more plentifully observed than in others.

Range outside the British Islands.—This species breeds far away to the north, on the tundras of the Petchora and the Yenesei, and also in Lapland and Scandinavia above 64° N. lat., as well as in Novaya Zemlya. It also nests near Archangel. A specimen procured by Mr. Seebohm in the valley of the Yenesei is referred by Count Salvadori to the true Bean-Goose, but in Eastern Siberia, eastwards from the Boganida River, its place is taken by an allied species, *A. serrirostris*, which breeds in the high north, and winters in China and Japan. The Bean-Goose of Europe winters in the southern countries of the Continent, and is abundant in most of them at that season of the year, as it is also in Southern Russia and the Caspian.

Habits.—To its arctic breeding-ground the Bean-Goose betakes itself as soon as there is any sign of the break-up of the cold, and of the ice disappearing, and Mr. Seebohm has given a very graphic account of his meeting with the species on the Petchora and on the Yenesei Rivers, where he saw the first birds on the 9th and 10th of May respectively. Small flocks passed during the next fortnight, but on the wind changing to the north, and the frost recommencing, the geese were seen flying south again. When, however, the full migration set in, he says that "flock after flock followed every few minutes, winging their way northwards at a great speed. The first arrivals flew high in the air, as if keeping a good look-out for any open water, but when the thaw commenced they flew low, many skimming over the surface of the snow on the ice of the river, below the level of the forests, but most of them hugging the shore-line."

After the young are hatched, the old birds begin to moult, and for this purpose retire into the tundra, accompanied by the goslings. As neither young nor old birds are able to fly, these flocks proceed at a walking pace, and at these times numbers fall victims to the Samoyeds, who depend largely on their store of these birds for their winter food. Mr. Seebohm met with one of these flocks on the Petchora. "At least a hundred old geese, and quite as many young, perhaps twice or thrice that number, were marching like a regiment of soldiers. The vanguard, consisting of old birds, was half-way across the stream, whilst the goslings brought up the rear, and were running down the steep bank to the water's edge as fast as their legs could carry them. The green grassy banks of the river, where the Geese had evidently been feeding, were strewn with feathers, and in five minutes I picked up a large handful of quills. They were evidently migrating to the interior of the tundra, moulting as they went along. On the following day, our stock of provisions being entirely exhausted, we sent a foraging party after this flock of Geese, who met with them a few versts higher up the river, and secured eleven old birds and five goslings. Most of the Geese were in full moult and unable to fly, and both old and young made for the water, attempting to conceal themselves by diving."

Nest.—A slight hollow scraped in the soil and lined with dead grass, moss, sometimes a few feathers, and always plenty of the light grey down of the bird itself (*Seebohm*).

Eggs.—Three, sometimes four in number; creamy-white, or yellowish-buff when stained, and with scarcely any gloss. Axis, 2·95–3·4 inches; diam., 2·15.

IV. THE PINK-FOOTED GOOSE. ANSER BRACHYRHYNCHUS.

Anser brachyrhynchus, Baillon, Mém. de la Soc. Roy. d'Em. d'Abbev. 1833, p. 74; Macg. Br. B. iv. p. 602 (1852); Dresser, B. Eur. vi. p. 369, pl. 413 (1878); B. O. U. List Br. B. p. 116; Saunders, ed. Yarr. iv. p. 270 (1885); Seebohm, Br. B. iii. p. 498 (1885); Saunders, Man. p. 391 (1889); Lilford, Col. Fig. Br. B. part xxv. (1893); Salvad. Cat. B. Brit. Mus. xxvii. p. 103 (1895).

Anser segetum brachyrhynchus, Seebohm, Brit. B. iii. p. 498 (1885).

Adult Male.—Similar to *A. fabalis*, and, like that species, having no white outer tail-feathers; the flanks greyer and not so marked with brown; the grey of the wings, as well as of the lower back and rump, rather lighter than in *A. fabalis*. It is, however, easily distinguished from that species by its pink feet and by the pink band on the bill. Total length, 26·0 inches; culmen, 1·8; wing, 16·5; tail, 5·4; tarsus, 3·0.

Adult Female.—Similar to the male, but smaller. Total length, 25·0 inches; wing, 16·2.

Range in Great Britain.—In autumn and winter considerable flocks of this Goose are observed on the east coast of Scotland and England, and at Holkham in Norfolk, where protection is afforded by the Earl of Leicester to the wild-fowl, numbers of these Geese may be seen in the autumn. The species is not often recorded from the south or the west of England, but it visits the west of Scotland and the Outer Hebrides, and has only once been recorded from Ireland.

Range outside the British Islands.—The Pink-footed Goose is known to breed in Iceland and in Spitsbergen, and is probably the species noticed by Mr. Leigh Smith on Franz-Josef Land, but on Novaya Zemlya only the Bean-Goose was observed by Admiral Markham. It has not been proved to breed in Scandinavia, and its distribution in winter in Northern Europe is also not thoroughly understood, though it has been procured in Holland, in Belgium, and in France.

Habits.—This species appears to be exceedingly shy, wherever it occurs, whether during the breeding-season or during the winter, but very little has been recorded of the nesting-habits of the Pink-footed Goose. In Spitsbergen it is said to nest mostly on the low rocks near the coast, and Mr. Chapman found young birds and moulted feathers in such situations, but the species is also believed to nest in the high cliffs a mile or two from the sea, according to Messrs. Evans and Sturge.

In its summer home the Pink-footed Goose has much the same habits as its close relation the Bean-Goose. In winter, when it visits us in England, it is found feeding in the stubble-fields, but as the tide falls the birds betake themselves to their favourite sand-banks and rest well away from danger. This is certainly the case with the Geese at Holkham, for, although Mr. Seebohm says that they only go out to the sand-banks at nightfall, I have seen flocks of them flying out, day after day, as soon as the sand-banks beyond the bar at Wells were left uncovered. They fly very high in the air, well out of gun-shot, in small or large parties, in a V or W form, and sometimes a couple of hundred or more will be on the wing together, flock succeeding flock, and the sound of so many Geese at once, uttering their musical "tin-trumpet"-like call, is one which never fails to form an interesting experience to the listener.

Nest and Eggs.—Similar in character to those of the Bean-Goose.

THE BRENT GEESE. GENUS BRANTA.

Branta, Scop. Ann. I. Hist. Nat. p. 67 (1769).

Type, *B. bernicla* (L.)

In the Brent Geese the serrations of the upper mandible are not visible from outside, and the cutting-edge of the mandible, or tomium, is almost straight.

Count Salvadori recognises eight species of Brent Geese, all of them inhabitants of the northern parts of the Old and New Worlds, breeding in the high north, and coming south in large flocks in winter. The large Canada Goose, which has been kept in confinement in England for many years, and from which all British-killed examples are believed to have escaped, is a North American species, of which two other races *B. hutchinsi* and *B. occidentalis*, are recognised by American ornithologists. The series in the British Museum is insufficient for me to determine the value of these forms, but I agree with Count Salvadori that they appear to be very doubtfully distinct. *Branta minima* is, however, a small and well-defined race belonging to Western North America. *B. nigricans* has the same habitat, but occurs also on the coasts of Eastern Asia. All the other species of *Branta* are visitors to Britain, and are treated of in the following pages.

I. THE BERNACLE GOOSE. BRANTA LEUCOPSIS.

Anas leucopsis, Bechstein, Orn. Taschenb. ii. p. 424 (1803).

Bernicla leucopsis, Macg. Br. B. iv. p. 622 (1852); Dresser, B. Eur. vi. p. 397, pl. 415, fig. i. (1878); B. O. U. List Br. B. p. 118 (1883); Saunders, ed. Yarr. Brit. B. iv. p. 286 (1885); id. Man. Br. B. p. 397 (1889).

Anser leucopsis, Seebohm, Br. B. iii. p. 512 (1885); Lilford, Col. Fig. Br. B. part xi. (1889).

Branta leucopsis, Salvad. Cat. B. Brit. Mus. xxvii. p. 117 (1895).

Adult Male.—General colour above ashy-grey, with white margins to the feathers, before which is a black band, so that the upper surface is prettily banded, especially on the wing-coverts and inner secondaries; the mantle blackish, like the neck, but the upper back banded like the wings; lower back and rump black; sides of rump and upper tail-coverts white; tail entirely black; bastard-wing, primary-coverts, and primaries grey, the latter black towards the ends; the secondaries pearly-grey, blackish at the tips and on the inner webs; forehead and crown white to the line between the middle of the eyes; the middle and hinder part of the crown, as well as the whole of the neck, lower throat, fore-neck, and chest, black, the latter obscured with dusky-brown margins; lores and feathers in front of the eye black, browner near the base of the bill and on the base of the forehead; cheeks, ear-coverts, eyebrow, and throat pure white; breast and abdomen white; the sides of the body pearly-grey, the feathers tipped with white, before which is a brownish shade producing a slightly mottled appearance; thighs black; under wing-coverts and axillaries pearly-grey, with whitish tips and dusky sub-terminal bars like the upper wing-coverts; bill, feet, and claws black; iris dark brown. Total length, 30·0 inches; culmen, 1·25; wing, 15·0; tail, 5·3; tarsus, 3·1.

Adult Female.—Similar to the male, but a little smaller.

Young.—Differs from the adults in having some black feathers intermingled with the white of the cheeks; the feathers of the back and wing-coverts with a rufous tinge at the ends; the grey bars on the flanks darker, and the legs, according to Count Salvadori, not so black as in the adults.

Range in Great Britain.—A winter visitor from the north, but rare on the eastern coasts of our islands, and decidedly so in the English Channel. On the western coasts it occurs much more plentifully, and it frequently arrives in thousands, according to Mr. Howard Saunders, in the upper part of the Solway between the end of September and the latter part of March. In the western isles it occurs in some abundance, and also visits the south of the Shetlands, but is local in Ireland, though abundant at certain places on the northern and eastern coasts.

Range outside the British Islands.—Very little is known of the breeding-home of the Bernacle Goose, for, however plentifully it may occur in winter, we are still in want of information as to its nesting. It may breed in Iceland and Greenland, but there is as yet no proof of the fact, and the information as to its nesting in Spitsbergen and Novaya Zemlya is equally unsatisfactory, though it is extremely probable that it does so, and the finding of the species in Northern Spitsbergen in a complete state of moult, as recorded by the Rev. A. E. Eaton, is almost conclusive proof that the species breeds there. Professor Collett has recorded the nesting of the species on Borgevær, one of the Lofoden Isles, but this may be an exceptional instance. Mr. Trevor-Battye says that it breeds on the Gusina River in the island of Kolguev. In winter it is occasionally found on the shores of Hudson's Bay, and occurs at this season in Russia and on the coasts of other countries in Northern Europe, rarely wandering to the Mediterranean countries.

Habits.—These resemble the habits of the other shore-haunting Geese, the birds feeding on grass in the marsh-lands, and retiring to sand-banks to rest. One of the best accounts of the habits of the Bernacle is that given by the Rev. H. A. Macpherson in his "Vertebrate Fauna of Lake-land." He says that the species is well-known on the coast-line, but is only abundant on certain salt-marshes between Silloth and Floriston, and has been observed crossing the Pennine Hills on migration. His description of the habits of the Bernacle corresponds very closely with those of the Pink-footed Goose as noted by me at Holkham. "When the tide of the Solway begins to ebb, and isolated sand-banks appear above a wild waste of waters, Bernacles often rise off Rockliffe marsh, and alight again on the first bars exposed, there to linger until another and more extended sand-bank becomes dry. Other variations occur in their daily routine, such as alighting in the shallows of the estuary, and marching in a line to the brow of the marsh opposite, which gained, they range themselves along the edge of the loose turfs of the saltings; or, again, they alight in the water, and swim a short distance. They are never long silent, neither do they associate with other fowl. They generally leave the Solway in March and April, but sometimes a few linger into May. At that season, pinioned Bernacles exhibit much restlessness, and display symptoms of the migratory impulse by loud calls. Those shot in open weather are considered good eating."

Nest.—Unknown, in a wild state.

Eggs.—Those laid in confinement are white. Axis, 2·75–2·9 inches; diam., 1·85–2·0.

II. THE BRENT GOOSE. BRANTA BERNICLA.

Anser brenta, Pall. Zoogr. Rosso-As. ii. p. 229 (1811); Seebohm, Br. B. iii. p. 508 (1885).

Bernicla brenta, Macg. Br. B. iv. p. 629 (1852); Dresser, B. Eur. vi. p. 389, pl. 415, fig. 2 (1877); B. O. U. List Br. B. p. 117 (1883); Saunders, ed. Yarr. Br. B. iv. p. 290 (1885); id. Man. Br. B. p. 399 (1889); Lilford, Col. Fig. Brit. B. part xxiv. (1893).

Anser brenta glaucogaster (Brehm.); Seeb. Brit. B. iii. p. 508 (1885).

Branta bernicla, Salvad. Cat. B. Brit. Mus. xxvii. p. 119 (1895).

Adult Male.—General colour above greyish-brown, decidedly slaty; the lower back and rump, as well as the central upper tail-coverts, darker, the latter inclining to blackish; wing-coverts like the back; bastard-wing, primary-coverts, and quills black, the innermost secondaries like the back; the sides of the lower rump and the upper tail-coverts white, and hiding the tail-feathers, which are black; head, neck, and upper mantle, as well as the throat and fore-neck, sooty-black, with a patch of white-tipped feathers on each side of the neck; breast and abdomen brownish-grey, sharply defined against the black of the fore-neck, and shading off into pure white on the lower abdomen, vent, and under tail-coverts; the sides of the body and flanks mottled with broad white edgings to the feathers, before which is a shade of brown; under wing-coverts and axillaries slaty-grey; bill, feet, and toes black; iris dark brown. Total length, 21·0 inches; culmen, 1·35; wing, 12·7; tail, 4·6; tarsus, 2·1.

Adult Female.—Similar to the male, but a little smaller.

Young Birds.—Paler grey and having the neck entirely black, and may be distinguished by the whitish edges to the wing-coverts and scapulars, which gives them a spotted appearance.

Characters.—The Brent Goose is easily recognised by the abnormal length of the upper and under tail-coverts, which reach to the end of the tail-feathers, and occasionally even beyond them, so that the tail is almost completely hidden. The head in the present species and its allies is entirely black. The under-parts are greyish, or whitish, contrasting strongly with the black of the neck and chest.

There are two forms of the Common Brent Goose, both of which occur in England and appear at first sight to be specifically distinct. The true *Branta bernicla*, which is supposed to range from the Taimyr Peninsula to Novaya Zemlya, Franz-Josef Land, and Spitsbergen, has the belly dark grey, and Mr. Seebohm considers the form with the whitish belly, *B. glaucogaster*, to take the place of the common Brent from the west coast of Greenland to the Parry Isles. These two races are further supposed to be distinguished from the Pacific Brent, *B. nigricans* (which has the belly nearly as black as the throat and chest), by the white markings on the sides of the neck, *not* meeting in front. This last is not a specific character, for it is found occasionally in both the dark and light forms of the Common Brent. Although the series of specimens of these Geese in the British Museum is not a large one, it is sufficient to show that intermediate specimens between the light and dark forms often occur, and I agree with Count Salvadori that they cannot be separated as races. Nor is the restriction o each race to a separate geographical area, as propounded b Mr. Seebohm, confirmed by recent researches, for a specimen of the white-breasted form from Novaya Zemlya is in the Museum, while Mr. Trevor-Battye found both light and dark-breasted individuals on Kolguev.

Range in Great Britain.—The commonest of all the Geese which visit our shores in the winter, and occurring in great numbers in certain parts, particularly on the east coasts of England and Scotland, as well as in Ireland. On the western coasts it is not so common as on those of the east and south.

Range outside the British Islands.—How far north the Brent Goose goes during the breeding-season is not yet discovered, but its range probably extends as far as land is known. From the Taimyr Peninsula it ranges westward throughout the Arctic Regions in summer, the dark-bellied form being the principal inhabitant of Novaya Zemlya, Spitsbergen, Kolguev, &c., though not exclusively, as has already been pointed out, and the light-breasted form taking its place from Greenland to the Parry Islands. In winter it migrates south, and occurs along the coasts of Northern and Western Europe, even occasionally visiting the Mediterranean countries.

Habits.—This Goose is entirely a maritime species, and mostly feeds during the day-time. Mr. Howard Saunders says that it does not dive, but searches on the ooze, or with head and neck extended below the surface of the water in shallow places, for aquatic plants, "especially grass-wrack (*Zostera marina*) and laver (*Ulva latissima*): whence the local names 'Ware-Goose' and 'Rood-Goose,' *i.e.*, 'Root-Goose'; small crustaceans and marine insects are also eaten. The call-note is a loud *cronk* or *honk*, audible at a considerable distance."

The Brent Goose breeds in Kolguev Island, according to the admission of the Samoyeds, but Mr. Trevor-Battye never saw the nest or the egg. Vast numbers of old and young birds appear off the sand-banks in July, and he describes in a graphic manner in his work, "Ice-bound on Kolguev," the way in which the Geese are trapped on that island by the Samoyeds—by placing a large net supported on poles, and sending men out in boats to drive the Geese inland. At this time of year the Brent Geese are moulting and cannot fly, and are gradually driven into the trap by the natives, and all slaughtered. On the occasion when Mr. Trevor-Battye witnessed this capture, 3,325 Geese were taken, of which no less than 3,300 were Brents. Of the interesting details given by the author there is not space to extract more than a few words, but the whole scene is very vividly described by him. "Long before we could see the boats, for the mist had thickened, we could hear shouting and the cries of the Geese, but after a bit first one boat and then another came into view. On the men came, but very slowly; now pulling across a creek, now pushing the arnoh over a bit of mud or hauling it over a sand-ridge, sometimes leaving it altogether and running off to head the Geese. So, slowly, they came zig-zagging along.

"By this time we could see Geese by thousands through the mist. I could even distinguish the short trumpet-note of the Brent among the general babel. It was, indeed, a babel. How to convey to you any idea of it I do not know. If you can imagine many hundred farmyard Geese and many thousand cornets all sounding together, and crowded on by a handful of screaming wild men—if you can imagine all this, then you are not far off the mark. . . .

"For some little while the Geese delayed as though they felt that they were getting too much inland, or suspected a trap in front. Then the boats came up from behind and the Geese crowded on. They didn't like going. Sometimes the leading Geese would stop and wheel about, heading right into the mass. . . . . But the boats came steadily on. Every moment I looked to see the parents escape by diving, or expected some to rise, for it was plain enough that many were full-winged. Neither of these things they did; only, like a pack of idiots, they 'wanked' and swam along. The grey Geese dived. The Bean and the White-fronts behaved exactly alike. First they laid out their long necks flat on the water, as their fellows did on the land. Then, as the boats came nearer, they sank their bodies till the water was almost over their backs. It was wonderfully difficult to see them—they looked like bits of stick. When a boat approached a bird, it would just sink its head and shoot forward under the water. They never went down like Diving-Ducks."

"And now the body of Brents was exactly opposite the entrance to the nets, and about them in a half-circle were the boats. Round and round they swam, but refused to leave the water. The boats did not dare to close in, for fear the Geese should break. It was a ticklish moment—the Geese would not make the land. At last a single old Goose, a Bean he was, stepped out and ran up the bank. He was quickly followed by one or two more, and then by the first of the Brent. And now that they had started they went quickly enough, scrambling after one another, and heading into the net. Over the green they ran like a flock of domestic Geese. Sometimes they aimed for right or left, but then the children showed themselves and the Geese were turned. The last bird was in, and then we closed the rear. Not a Brent had flown, not a Brent had dived, not one escaped. Of all that army every bird was in the net—a dense black moving mass." The killing of the Geese took some time, and then they were divided, and ultimately cached. "The turf cut round with the axe, where the cloudberry grew thickest, was torn up with the hands; then the Geese were stood on their tails with their heads tucked in, till the girls had made a circular group some three or four yards across. Then the turfs were rolled back on them a double layer, and the packing was complete."

Nest.—The nest has been described by Colonel Feilden, who found the species breeding in 82½° N. lat., during the expedition of the *Alert* and *Discovery* to the Arctic Regions. The eggs were laid in the third week of June. The nests were situated on the sloping hillsides between the snow-line and the sea, and were placed in a slight depression of the ground, with a good foundation of grass, moss, and the stems of saxifrages, and plentifully lined with a warm bed of down.

Eggs.—Four or five in number; creamy-white, with a slight gloss. Axis, 2·6–2·95 inches; diam., 1·75–1·9.

III. THE RED-BREASTED GOOSE. BERNICLA RUFICOLLIS.

Anser ruficollis, Pallas, Spicil. Zool. fasc. vi. p. 21, tab. v. (1769); Seebohm, Br. B. iii. p. 515 (1885).

Bernicla ruficollis, Macg. Br. B. iv. p. 634 (1852); Dresser, B. Eur. vi. p. 403, pl. 416 (1876); B. O. U. List Br. B. p. 119 (1883); Saunders, ed. Yarr. Br. B. iv. p. 281 (1885); id. Man. Br. B. p. 395 (1889); Lilford, Col. Fig. Br. B. part xxi. (1892); Salvad. Cat. B. Brit. Mus. xxvii. p. 124 (1895).

Adult Male.—General colour above black, including the centre of the lower back and rump, the sides of the latter being pure white like the upper tail-coverts; wings and tail black, with greyish white margins to the median and greater coverts; crown of head and entire hind-neck black, separated by a band of white from the mantle; sides of face and throat black; a large loral patch of white; below the eye a small white spot; ear-coverts forming a large chestnut patch, entirely encircled by white, which skirts the black of the hind-neck in a broad line; lower throat, fore-neck, and sides of neck bright chestnut, separated from the white on the sides of the neck by a line of black, and again by another line of black across the lower fore-neck, this black line being continuous with the black of the hind-neck; across the chest a narrow line of white, continuous with the white band across the mantle; entire breast black, the feathers having white bases; the entire abdomen and under tail-coverts white, as well as the feathers of the thighs, some of which are black-tipped; sides of the body white, the lower flanks handsomely banded with black; axillaries and under wing-coverts black; bill nearly black; feet and toes dark brown, nearly black; iris hazel. Total length, 20 inches; culmen, 1·0; wing, 13·5; tail, 4·6; tarsus, 2·1.

Adult Female.—Similar to the male, but slightly smaller.

Young Male.—Has the same markings as the adult, but the chestnut is much paler and the black is tinged with brown, and the feathers of the upper surface have distinct brown edges, especially on the wing-coverts; the white bands across the upper mantle and on the lower fore-neck are not so well defined as in the old bird.

Range in Great Britain.—A very rare visitor, of which eight authenticated occurrences are on record, the first dating back to 1776, when a specimen was procured near London, and is still preserved in the Newcastle Museum. Nearly all the occurrences of the species have taken place on the east coast, but Mr. Howard Saunders mentions two in South Devon, and one in Caithness.

Range outside the British Islands.—The Red-breasted Goose breeds in the lower valleys of the Ob and the Yenesei Rivers in Siberia, above the limit of forest-growth, and was found breeding by Middendorf on the Boganida. It winters on the Caspian Sea, and has occurred in most countries of Europe at that season of the year. Lord Lilford possesses an Egyptian specimen, collected by the late Mr. Stafford Allen, and it is no doubt an occasional winter visitant to that country, as the species is often depicted on the ancient monuments.

Habits.—The Red-breasted Goose is such a rare bird in most parts of Europe, and has its breeding-range so restricted to Siberia, that very little has been recorded about the habits of the species. Mr. Seebohm, who is one of the few English naturalists who have seen this Goose in a state of nature, has given the following notes on it: "Radde describes its great abundance in winter on the islands near the south-western shores of the Caspian. After a heavy fall of snow, the fishermen clear a space on the grassy islands, and often catch them in such numbers in nets that they are sold at from five to ten kopecks apiece. When they begin to collect before migration, thousands of flocks are reported to be seen, and it is stated that the worst shots obtain as many as two hundred birds during the season. When feeding together they utter a short trumpet-like note; but their cry, as they call to each other on migration, is a double note, which Finsch says is easily imitated with the aid of a bit of birch-bark, and which Pallas represents as resembling the sound of the syllables, *shak-voy*, whence its local name among the Russian sportsmen of Obdorsk. It is an extremely shy bird and very difficult to shoot, but, curiously enough, reconciles itself at once to confinement, and soon becomes very tame. The only information which we possess respecting its winter habits is that furnished us by Radde, who states that it is a very gregarious bird, always seen in flocks which frequent the pastures on the southern shores of the Caspian during the day, and retire far out to sea for the night."

Nest.—Said by Mr. Seebohm's collectors to be indistinguishable from that of the Bean-Goose, except that it was somewhat smaller.

Eggs.—These are laid early in July. The colour, according to Mr. Seebohm, is "creamy-white, with obscure traces of an underlying green shell; the surface is rather smooth but not glossy, and the shell is very fragile. Axis, 2·7 inches; diam., 1·8."

THE SWANS. SUB-FAMILY CYGNINÆ.

These birds are so familiar to everyone that a long and detailed description of their characters is not necessary. They are distinguished by two features which prevent their being mistaken for any other of the Ducks or Geese: they have no lobe on the hind-toe, and at the same time a remarkably long neck, which equals or even exceeds the length of the bird's body. They further differ from the Ducks and Geese in having the lores bare, but in the Chilian Swan (*Coscoroba coscoroba*) the lores are feathered, and this bird seems to be intermediate between the Swans and the Geese. In some of the species the trachea is convoluted and enters the sternum.

The distribution of the Swans is principally arctic, and they breed in the high north of both hemispheres, but a true *Cygnus*, the Black-necked Swan (*C. melanocoryphus*), is found in South America. The Black Swan (*Chenopsis atrata*) is confined to Australia, and the aberrant genus, *Coscoroba*, to the south of South America.

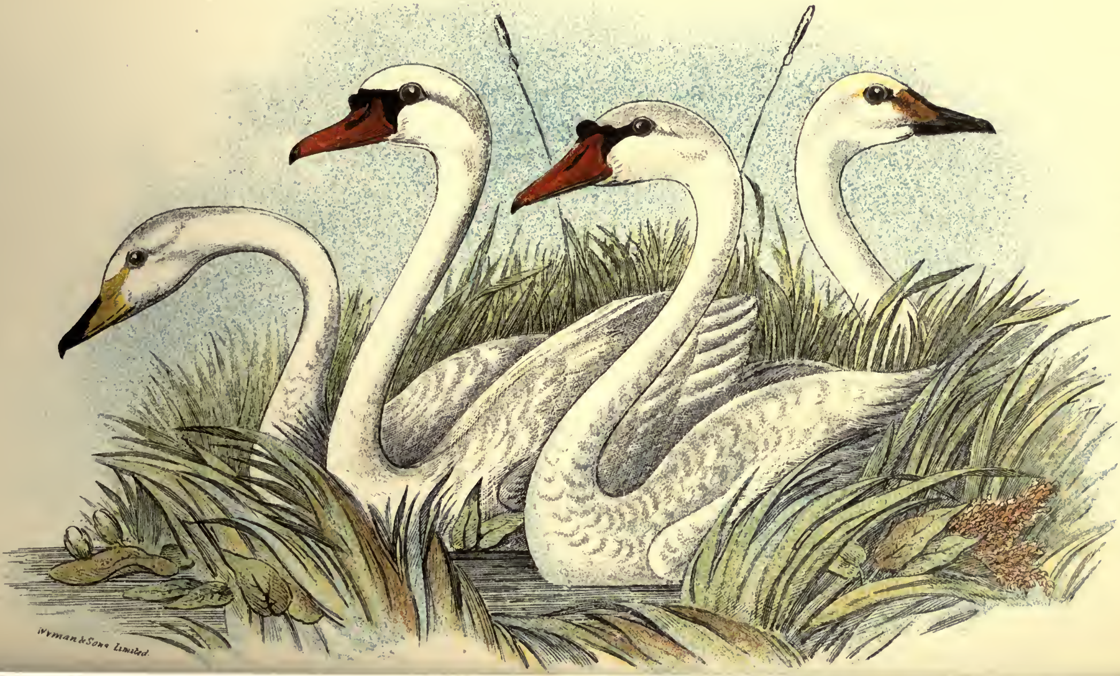
THE TRUE SWANS. GENUS CYGNUS.

Cygnus, Bechst. Orn. Taschenb. ii. p. 404, note (1803).
Type, *C. olor* (Gm.).

Like the Geese, the Swans moult their quill-feathers after the breeding-season, and become equally helpless, being able to save themselves only by swimming, as they are incapable of flight. As with the Geese, they are then captured by the dexterous natives, and have become extinct in many of their old breeding-haunts.

With regard to the supposed occurrences of the Trumpeter Swan (*Cygnus buccinator*) and the Whistling Swan (*C. americanus*) in England, I cannot do better than quote the opinion of Mr. Howard Saunders as to the worth of the records. He observes: "An immature Swan shot at Aldeburgh in October, 1866, and now in the Ipswich Museum, is, in the opinion of Professor Newton, an example of the American Trumpeter Swan, *C. buccinator*, a larger species than the Whooper with a

PLATE LV.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black bill. It has long been naturalised in this country, and has repeatedly hatched its young in captivity, so that there is always a strong probability of the cygnets escaping before they can be pinioned. Another North American species which has been stated—but on far weaker evidence—to have been found at long intervals in the shops of Edinburgh poulterers, is *C. americanus*, a bird which is smaller than the Whooper, though larger than Bewick's Swan, which it resembles in having patches of small size at the base of the bill, but of a deep orange-colour. In the adults of our Whooper and the American Trumpeter Swan, the loop of the trachea between the walls of the keel of the sternum takes a vertical direction, whereas in Bewick's Swan and in *C. americanus* the bend is horizontal; but in [illegible] birds these distinctions are less marked, and are not absolutely [illegible]."

I. THE WHOOPER SWAN. [illegible]

Anas cygnus, Linn. S. N. i. p. [illegible]

Cygnus musicus, Macg. Br. B. iv. p. [illegible] ([illegible]); Dresser, B. Eur. vi. p. 433, pl. 4[illegible], fig. 4 ([illegible]); B. O. U. List Br. B. p. 120 (1883); Saunders, ed. Yarr. Br. B. iv. p. [illegible] (1885); Seebohm, Br. B. iii. p. 480 (1885); Saunders, Man. p. [illegible] ([illegible]); Lilford, Col. Fig. Br. B. part [illegible] (189[illegible]); Salvadori, Cat. B. Brit. Mus. xxvii. p. 26 (189[illegible]).

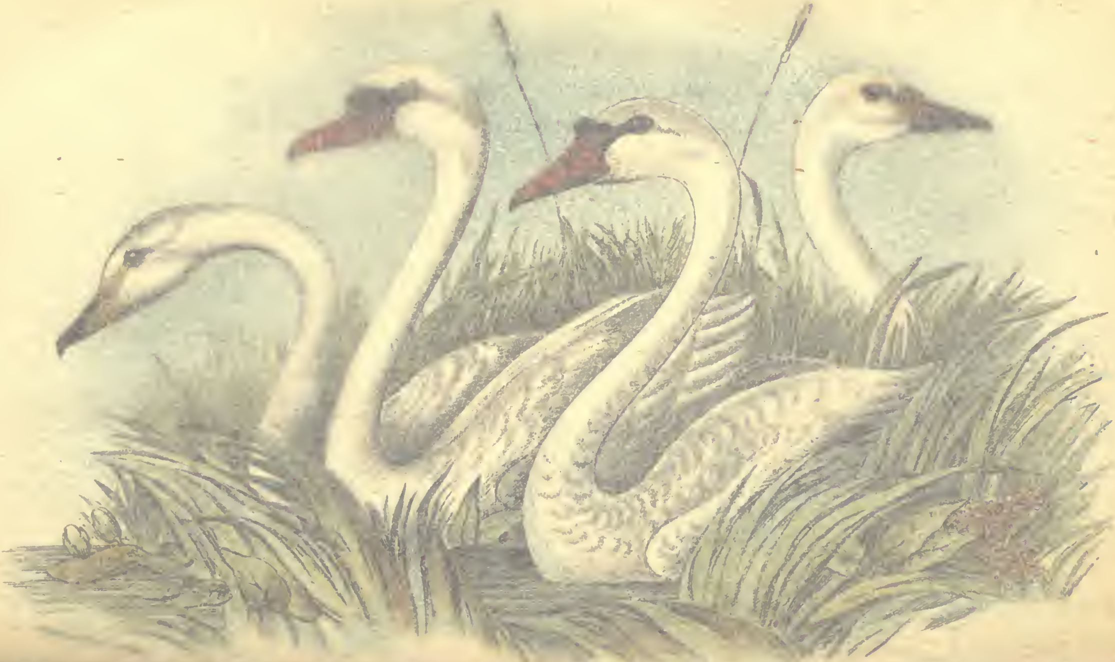
([illegible] *Fig.* 1.)

Adult Male.—White all over, with occasionally some ferruginous-yellow on the head; "anterior part of the bill depressed and black, the basal part, with the lores yellow, this colour extending forward along each lateral margin of the upper mandible *beyond the openings of the nostrils, which are black;* the [illegible] colour only reaches half-way to the gape; legs, toes, and [illegible] membranes black. Total length, about 5 feet; culmen, [illegible]; wing, 25·5; tail, 8·5; tarsus, [illegible]" (*Salvadori*).

Adult Female.—Similar to the male, but a little smaller.

Young Birds.—Greyish-brown; "beak first of a [illegible] colour, the tip and the lateral margins black, [illegible] with a reddish-orange band across the nostrils, [illegible] base and lores pale greenish-white" (*Salvadori*); "[illegible] colour" (*Saunders*).

PLATE LV



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I. THE WHOOPER SWAN. CYGNUS MUSICUS.

Anas cygnus, Linn. S. N. i. p. 194 (1766; pt.).
Cygnus musicus, Macg. Br. B. iv. p. 659 (1852); Dresser, B. Eur. vi. p. 433, pl. 419, fig. 4 (1880); B. O. U. List Br. B. p. 120 (1883); Saunders, ed. Yarr. Br. B. iv. p. 308 (1885); Seebohm, Br. B. iii. p. 480 (1885); Saunders, Man. p. 401 (1889); Lilford, Col. Fig. Br. B. part xxv. (1893); Sharpe, Cat. B. Brit. Mus. xxvii. p. 26 (1895).

(*Plate LV. Fig.* 1.)

Adult Male.—White all over, with occasionally some ferruginous-yellow on the head; "anterior part of the bill depressed and black, the basal part, with the lores, yellow, this colour extending forward along each lateral margin of the upper mandible, *beyond the openings of the nostrils, which are black;* the black colour only reaches half-way to the gape; legs, toes, and their membranes black. Total length, about 5 feet; culmen, 4·2; wing, 25·5; tail, 8·5; tarsus, 4·2" (*Salvadori*).

Adult Female.—Similar to the male, but a little smaller.

Young Birds.—Greyish-brown; "beak first of a dull flesh-colour, the tip and the lateral margins black, posteriorly black, with a reddish-orange band across the nostrils, and with the base and lores pale greenish-white" (*Salvadori*); "feet flesh-colour" (*Saunders*).

Nestling.—Clothed with white down.

Characters.—There is no knob at the base of the bill, which has nearly the basal half yellow; the black terminal portion not extending above the nostrils, and only reaching laterally half-way to the gape. Culmen, 4·2 inches.

Range in Great Britain.—The Whooper or Whistling Swan, as this species is variously called, is a bird of passage, or a winter visitor, arriving on the coasts and islands of Northern Britain in November, and remaining till the spring, sometimes as late as May. Hard weather will bring the Swans south, and they may then be found on the southern coasts, or even on large sheets of inland waters. In Ireland they are said to be far less plentiful than Bewick's Swan.

Range outside the British Islands.—The Whooper breeds in high northern latitudes from Iceland eastwards throughout Northern Europe and Siberia, wandering south in winter to most of the Mediterranean countries, as well as to Central Asia, the Japanese Islands, and China. In Norway it is only found nesting above the Arctic Circle, but in Sweden and in Northern Russia it is found as low as 62° N. lat.

Habits.—Mr. Seebohm gives the following excellent account of the habits of the Wild Swan:—"When Harvie-Brown and I were in the valley of the Petchora, waiting at Ust Zylma, a little south of the Arctic Circle, for summer to come, one of the first warnings that we had of the approaching break-up of the winter was the arrival of the Swans. At first they arrived in pairs. The earliest date was on the 11th of May; every day the numbers passing over increased, and occasionally we saw them on the snow or on the ice; until on the 20th, when the ice on the river broke up, the last Swan appeared to have passed us, and we saw no more of them, until we arrived at their breeding-grounds. A month later, when we had reached the tundra, where a few small birches and willows was all that was left of forest-growth, we came upon the breeding-ground of the Swans in the delta of the Petchora. We found several nests between the 19th and 30th of June. The Whooper is a very shy bird. We never got a chance of a shot, except once or twice from a boat. We saw very little of it on the tundra, the lakes probably not producing the particular water-plants which formed its favourite food, but it was very common on the islands in the Delta, and was especially fond of the 'Kourias,' long reaches of water running inland for some little distance, and often fringed with willows. Most of the islands in the Delta are under water for a few days, when the river is at its height, but they are nevertheless generally covered with low willow-trees, and very often, in the middle of an island, there is a little lake. By cautiously stealing up to these lakes, under cover of the willows, we frequently obtained the most charming glimpses of happy families of Swans, and half a dozen different species of Ducks, feeding in delightful security. The Whooper is a ten times handsomer bird than a tame Swan in the eyes of an ornithologist, but it is not really so graceful; its neck is shorter, and its scapulars are not so plume-like. Instead of sailing about with its long neck curved into the shape of the letter S and bent back almost to the fluffed-up scapulars, the Whooper seemed intent on feeding with his head and neck under water. At the slightest noise the neck was raised erect, and the head turned round from side to side, like a weathercock on a steeple. Even in July the Whoopers were not always single or in pairs, and we frequently saw half a dozen swimming together, or preening their feathers on a sand-bank. We sometimes tried to drift silently down stream within gun-shot of some of these small parties or herds, as they are called in the technical language of the sportsman, but they were too many for us, and rose with a tremendous splash, their wings beating the water for twenty or thirty yards, before they got sufficient way on, to be able to rise high enough. When once on the wing, they flew with great speed, with steady beats of their long powerful wings.

"On migration the Whooper is a very gregarious bird, and by far the greater number which passed us in the valley of the Yenesei on the way north were in herds, which generally flew in a wedge-shaped line; they were soon out of sight, and sometimes passed over us at a great height. Many a time, when struggling with snow-shoes on the treacherous half-melting snow in the forest, I have heard their trumpet-calls, without being able to catch a glimpse of them between the trees. The notes of the Whooper are like the bass notes of a trombone, and sometimes almost set your ear on edge; but they are very short, three or four trumpet-blasts, keeping time with the upward and downward strokes of the wing. It is not known that the food of the Whooper differs from that of its more southern ally: it consists chiefly of aquatic plants, water-insects, and molluscs."

The Rev. H. A. Macpherson, in his "Vertebrate Fauna of Lake-land," has given the following interesting note on the Wild Swan as observed by him in England:—

"It was on the 7th of February, 1891, that visiting Monkhill Lough, I found four Wild Swans swimming on the edge of the sedge. Hearing them '*clanging*,' I at once conjectured that they must be Whoopers. Soon after my arrival I had irrefutable evidence of their specific identity in their well-defined '*hooping*,' the action which accompanied this call being already familiar to me, as studied in a pinioned bird at the Zoological Gardens. They were feeding in company, and all four necks were sometimes straightened or bent forward at the same instant. For a few moments they would observe silence, then they 'hooped,' and, vociferating their peculiar clang, they all fell to feeding again. So closely did they *herd* together that two birds might often be mistaken for one. They appeared to be well contented with their new quarters, paying no attention to the barking of a dog. Once, indeed, one of the Whoopers seemed to be rather startled by the action of a Coot, which suddenly bobbed up beside it: the Swan flapped its wings uneasily, but did not attempt to fly. These Whoopers swam rapidly through the water, the head and neck slightly thrown back, and the black butt of the tarsus standing out in bold relief against the white body-colour. Their necks were supple and arched sinuously, held erect when the birds were at 'attention,' arched when they fed, but twisted in various forms to rearrange the plumage. Watching the four birds, you could see at the same moment one fellow resting with neck erect, its next neighbour arching its neck, a third shooting its neck forward in the shape of the letter S. On the whole there existed a wonderful spontaneity of action between these birds.

"On the 9th of February the four Whoopers were browsing in the sedge-beds in the centre of the lough. A solitary Mute

Swan was feeding alone, not as yet daring to associate with the distinguished strangers. It was pleasant to contrast the long-drawn, flat bodies of the Whoopers with the more rounded outline of *Cygnus olor*. The wild fellows swam together; one and another arched their necks backward in a loop, dipped gracefully forward, and then, raising their necks, allowed the water to trickle over their shoulders. This was their method of bathing, but there was nothing violent about it. On the contrary the action was easy and majestic, as became such lordly fowl. When they caught sight of us they became metamorphosed at once into a '*stiff-necked* generation,' and hurried off in line through the sedge. Reaching open water on the other side they became somnolent, first one, and then another, gracefully reclined at ease, floating idly on the water, and burying their long and supple necks in the dense feathering of their dorsal plumage, while on either side their two companions kept vigilant watch with necks uplifted, and intent to detect any signs of renewed danger. It was noontide, and the winter sun shone out upon the still waters of the lough; before us, on the farther margin of the bank of sedge, floated the strange *voyageurs*, behind the birds was a tiny sea of glittering waters, against which the forms of these beautiful strangers looked dark by force of contrast. Only when we showed more openly did the Whoopers forego their attitude of disengaged ease; hitherto they had contented themselves with occasionally uttering their trumpet-call, but now a bird '*hooped*,' and again they crossed the sedge, this time in a fresh direction. So strongly matted together was the aquatic vegetation, at least in one place, that instead of swimming through, the Swans lifted their legs over the submerged plants which barred their progress; they swayed their bodies heavily as they crossed the barrier and regained an open track through the sedge. All at once the leader sounded his bugle-call, slightly throwing up the head when expelling the sound. A second bird passed, and the leader fell back in the file, but continued to sound his musical refrain at intervals. We found it difficult to describe their '*clang*' on paper. When we showed ourselves, we heard distinctly, '*hoop-hooper-hoop*'; then came a 'clang' followed by another 'hoop.' When a bird hoops, the neck is stiffened; this exercise is generally followed by a slight pause."

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Swan was feeding alone, not as yet daring to associate with the distinguished strangers. It was pleasant to contrast the long-drawn, flat bodies of the Whoopers with the more rounded outline of *Cygnus olor*. The wild fellows swam together; one and another arched their necks backward in a loop, dipped gracefully forward, and then, raising their necks, allowed the water to trickle over their shoulders. This was their method of bathing, but there was nothing violent about it. On the contrary the action was easy and majestic, as became such lordly fowl. When they caught sight of us they became metamorphosed at once into a '*stiff-necked* generation,' and hurried off in line through the sedge. Reaching open water on the other side they became somnolent, first one, and then another, gracefully reclined at ease, floating idly on the water, and burying their long and supple necks in the dense feathering of their dorsal plumage, while on either side their two companions kept vigilant watch with necks uplifted, and intent to detect any signs of renewed danger. It was noontide, and the winter sun shone out upon the still waters of the lough; before us, on the farther margin of the bank of sedge, floated the strange *voyageurs*, behind the birds was a tiny sea of glittering waters, against which the forms of these beautiful strangers looked dark by force of contrast. Only when we showed more openly did the Whoopers forego their attitude of disengaged ease; hitherto they had contented themselves with occasionally uttering their trumpet-call, but now a bird '*hooped*,' and again they crossed the sedge, this time in a fresh direction. So strongly matted together was the aquatic vegetation, at least in one place, that instead of swimming through, the Swans lifted their legs over the submerged plants which barred their progress; they swayed their bodies heavily as they crossed the barrier and regained an open track through the sedge. All at once the leader sounded his bugle-call, slightly throwing up the head when expelling the sound. A second bird passed, and the leader fell back in the file, but continued to sound his musical refrain at intervals. We found it difficult to describe their '*clang*' on paper. When we showed ourselves, we heard distinctly, '*hoop-hooper-hoop*'; then came a 'clang' followed by another 'hoop.' When a bird hoops, the neck is stiffened; this exercise is generally followed by a slight pause."

Nest.—A large structure, composed of dead sedge and coarse herbage, and concealed in the dense willow-scrub (*Seebohm*).

Eggs.—From two to four, but sometimes five and even seven, eggs are found; creamy-white in colour, slightly glossy, and with the surface granulated. Axis, 4·5 inches; diam., 2·85.

II. BEWICK'S SWAN. CYGNUS BEWICKI.

Cygnus bewickii, Yarrell, Trans. Linn. Soc. xvi. p. 445 (1833); Macg. Br. B. iv. p. 669 (1852); Dresser, B. Eur. vi. p. 441, pl. 419, fig. 3 (1880); B. O. U. List Br. B. p. 121 (1883); Seebohm, Br. B. iii. p. 484 (1885); Saunders, ed. Yarr. Br. B. iv. p. 315 (1885); id. Man. Br. B. p. 403 (1889); Lilford, Col. Fig. Br. B. part xxv. (1893); Salvad. Cat. B. Brit. Mus. xxvii. p. 29 (1895).

(*Plate LV. Fig.* 4.)

Adult Male.—Entirely white. Similiar to *C. musicus*, but of much smaller size; "lores and basal portion of the bill deep yellow, *but this colour not extending below the nostrils*"; remainder of the bill black, this black colour reaching on to the edges of the gape, and sometimes extending along the culmen; feet and toes dull black; iris hazel. Total length, 46–50 inches; culmen, 3·8; wing, 21·0; tail, 8·8; tarsus, 4·8 (*Salvadori*).

Adult Female.—Similiar to the male, but a little smaller.

Young Birds.—Greyish-brown, becoming white in the second winter, but having the bill lemon-yellow; iris yellow.

Character.—Bewick's Swan can be easily recognised from the Whooper by its smaller size, and by the colour of the bill, which has not only nearly all its basal part yellow like the lores, but is further distinguished by having the black of its terminal portion extended for some distance above the nostrils and backwards to the gape. The bill is much smaller than in the Whooper, the culmen only measuring 3·8 inches.

Range in Great Britain.—In England this Swan must be considered as a rarer bird than the Whooper, but on the Scottish coasts and the Outer Hebrides it occurs much more plentifully than its larger relative, and this is especially the case in Ireland, where it is sometimes seen, after hard frosts, by hundreds and thousands.

Range outside the British Islands.—Bewick's Swan breeds in North-eastern Russia and in Northern Siberia. It may even be found to nest throughout the Arctic Regions of the Old World, more especially on the islands, as it occurs in winter in the Japanese and Chinese Seas. Messrs. Seebohm and Harvie-Brown found the species breeding on the Petchora, and, until last year, this was the most western breeding-range recorded for the species, but Mr. Trevor-Battye has now procured it on Kolguev, as was predicted in 1885 by Mr. Seebohm (Hist. Br. B. iii. p. 485), when he wrote: "We are driven to believe that the Swans which are known to breed in great numbers on the island of Novaya Zemlya and Kolguev, and of which the species has not yet been determined, are Bewick's Swans, which migrate east in autumn, give the shores of Norway a wide berth, and drop down to winter on the western coasts of our islands." The occurrences of the species on the coasts of Northern Europe are few, with the exception of the British Islands, though it has been known to visit even the Mediterranean countries occasionally.

Habits.—For the account of these I am obliged once more to give an extract from Mr. Seebohm's work on British Birds, as he is almost the only naturalist who has seen this Swan in its breeding-haunts, and has given an account of its habits. He writes:—"The first Swan which ventured as far north as the Arctic Circle, in the valley of the Yenesei, during the weary months when Captain Wiggins and I were waiting for the arrival of summer, was seen on the 5th of May. It is probable, however, that this pioneer soon returned to the south, as we saw nothing more of them for some weeks. On the 9th Geese began to arrive, after the 16th they came in considerable numbers; but we saw no more Swans until the 28th, when many flocks passed over. During the next fortnight hundreds of large and small flocks winged their way over our heads, after which we saw no more of them until we got down to the Delta. They are quite as noisy as their allies, and are constantly calling to each other as they fly over, but their note is not so harsh. I call it a musical bark; Naumann expresses it as *klung;* and Sir Ralph Payne-Gallwey as *tong*, musically and quickly uttered.

"Bewick's Swan is quite as shy and difficult of approach as its ally; but there is not the slightest necessity to shoot this handsome bird in order to identify the species. It is fond of walking and standing on the mud or sand on the banks of the rivers and lakes where it feeds. All that is necessary is to mark down the place, find the heavy footprints, and measure them. The impress of the middle toe of Bewick's Swan, from the centre of the ball of the heel to the centre of the ball next the claw, measures five inches and a quarter; the footprints left by the Whooper measure an inch or more longer.

"Bewick's Swan scarcely differs from its ally in its habits, food, or in its choice of feeding- or breeding-grounds. Our trusty Samoyede servant in the Petchora brought us a Bewick's Swan which he had shot from a herd of nine, as they were swimming near the edge of a large lake. He succeeded in stalking up to within thirty paces of them, when they caught the alarm, immediately swam up close together, pausing for a moment to listen with upstretched necks. St. John describes the same habit of the Whooper in the north of Scotland."

Nest.—This is said by Mr. Seebohm's collectors to be like that of the Whooper. Mr. Trevor-Battye found the nest of Bewick's Swan in Kolguev, and says that it was a mound about 2 feet 6 inches in height and 4 feet 6 inches in diameter at the base. "It was perfectly smooth and symmetrical, tapering till the circular top was no more than about two feet across. The structure was entirely composed of little bunches of green moss, with the exception of a very little lichen, and a chance bit, here and there, of short light dead grass, pulled up with the moss; of course there were no green grasses or reeds as yet, and not a single piece of dead reed had been used. There was a thin lining only to the nest of dead grass, mixed with a little down."

Eggs.—Two or three in number; white like those of the Whooper, but smaller and less glossy. Axis, 3·9–4·2 inches; diam., 2·5–2·65.

III. THE MUTE SWAN. CYGNUS OLOR.

Anas olor, Gm. S. N. i. p. 501 (1788).

Cygnus olor, Dresser, B. Eur. vi. p. 419, pl. 418 (1880); B. O. U. List Br. B p. 119 (1883); Saunders, ed. Yarr. Br. B. iv. p. 324 (1885); Seebohm, Br. B. iii. p. 476 (1885); Saunders, Man. Br. B. p. 405 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 38 (1895).

(*Plate LV. Fig.* 2.)

Adult Male.—White all over, and distinguished from the other species by the colour of the bill, which is described by Count Salvadori as follows:—"Lores, frontal tubercle, base of upper mandible, nostrils, nail, edges of upper mandible and entire under mandible, black; remainder of the beak reddish-orange; legs and feet dull black; iris hazel." Total length, about 5 feet; culmen, 4·2; wing, 27·0; tail, 10·0; tarsus, 4·5.

Adult Female.—Similar to the male, but a little smaller, and with a smaller tubercle on the bill.

Young Birds.—Sooty-grey, paler on the neck and under surface of body; bill and legs grey. The nestlings are covered with down of a dull ashy-grey colour, which is paler and inclining to white on the lower throat and breast.

Characters.—In the Mute Swan the keel of the sternum is simple, and is not entered by the trachea, as in the foregoing species. The knob on the bill is also a distinguishing feature.

Polish Swan (*Cygnus immutabilis*).—This supposed species (Plate LV., Fig. 3) is said to have white cygnets, and in the adult birds the tubercle is less developed, and the legs and feet are more ashy-grey, but with regard to the latter characters Mr. Howard Saunders writes:—"Neither Mr. Bartlett nor I could find these distinctions in old birds in the Zoological Gardens which had been white as cygnets." Some ornithologists still believe in the difference of the Polish Swan as a species, and the Rev. H. A. Macpherson, in his "Vertebrate Fauna of Lake-land," gives a figure of the sternum and trachea of a young bird, which, he thinks, show characters defining the Polish from the Mute Swan.

On the other hand, Mr. Howard Saunders, Mr. Seebohm, and most of our leading British ornithologists regard the Polish Swan as only a kind of quasi-albino, probably produced by domestication. This opinion is endorsed by Count Salvadori, our first authority on the *Anatidæ*, who says that none of the characters attributed to *C. immutabilis* are constant.

Range in Great Britain.—The Swan is now universally distributed as a tame or semi-domesticated bird all over the three kingdoms, but it has been introduced into many of its present habitats. The species is said to have been first brought to England by King Richard I. from Cyprus. At Lord Ilchester's seat at Abbotsbury, near Weymouth in Dorsetshire, there is the largest Swannery in this country. Specimens are often shot in the winter, and these are generally supposed to be escaped birds, but as Mr. Howard Saunders points out, they may be thoroughly wild birds which have migrated to our shores from the Continent, in many parts of which the Mute Swan breeds in a thoroughly wild condition.

Range outside the British Islands.—The present species breeds in Southern Sweden, in Denmark and Germany, in Central and Southern Russia, on the Lower Danube, the Black and Caspian Seas, and as far east as Turkestan, Mongolia, and Amurland. In winter it visits the Mediterranean, and has been found at that season in North-western India.

Habits.—These are so well-known to every one of my readers that but few words are necessary. Mr. Mansel-Pleydell gives a very interesting account of the Abbotsbury Swannery in his "Birds of Dorset," and he states that in 1865 there were about 500 Swans on the estuary of the Fleet, and that the number had increased to 1,400 birds in 1880, but in the last-named year "the number became reduced by one-half, owing to the Fleet becoming frozen over during an extremely low spring-tide, when the water-plants growing at the bottom became entangled in the ice, and were torn up by the roots at the returning tide. Many of the Swans, thus suddenly deprived of their supply of food, either died of famine or migrated, and reduced the number to about 800, which average it now maintains."

The food of the Mute Swan consists of aquatic plants, as well as molluscs and insects, and it is said to devour frogs on occasion, while there are not wanting many river-side fishermen, who declare that the Swans eat small fish and ova.

The tame Swans nest earlier than wild ones, which do not have eggs before May, and they do not breed until they are two or more years old.

Nest.—A large structure of dead reeds and grass, sometimes more than two feet high and five feet across.

Eggs.—Three to five in number, but more are often found, and sometimes as many as ten or twelve have been recorded. They are greenish-white, and measure: Axis, 4·3–4·65 inches; diam., 2·8–3·1.

THE TRUE DUCKS. SUB-FAMILY ANATINÆ.

All the members of this Sub-family have, according to Count Salvadori, the hind-toe very narrowly lobed. There is in nearly every species a "speculum" of metallic colour on the wing, and the males have a bony swelling, or "bulla ossea," on the trachea. The bill is rather flat and broad in the true Ducks, and distinguishes them from the *Chenonettinæ*, or Goose-like Ducks, which inhabit the Southern Hemisphere.

The Egyptian Goose, as it is called, (*Chenalopex ægyptiaca*), is considered by Count Salvadori to belong to the present Sub-family. It is a species which has long been kept in confinement, and the many examples which have been shot in a wild state are doubtless individuals which have escaped. The same may be said of the Summer Duck (*Æx. sponsa*) and the Muscovy Duck (*Cairina moschata*). The changes of plumage through which most of the Ducks pass is very curious, and there are at least six of these. After the young have acquired their first plumage, both sexes resemble the old female. In the first year they are like the adults, but differ somewhat from both; then the male has a separate plumage from the female in the fully adult stage, and lastly there is the post-nupital dress of the male, when he retires into a sober-coloured plumage like that of his wife. This is when he is about to moult his quills, and at this season the males keep mostly apart from the females. Mr. De Winton writes to me: "All the Ducks take on the characteristic 'adult' plumage in the first year, but this is far from perfect, and though they may breed, I believe that it takes quite four years before a Duck arrives at the perfection of plumage. The full dress is scarcely complete by Christmas, and to see Ducks at their best, they must be observed in February and March, so that it would seem that they take nearly six months to attain their perfect plumage, after the change into their dull summer dress."

THE SHELD-DUCKS. GENUS TADORNA.

Tadorna, Fleming, Phil. Zool. ii. p. 260 (1822).

Type, *T. tadorna* (L.).

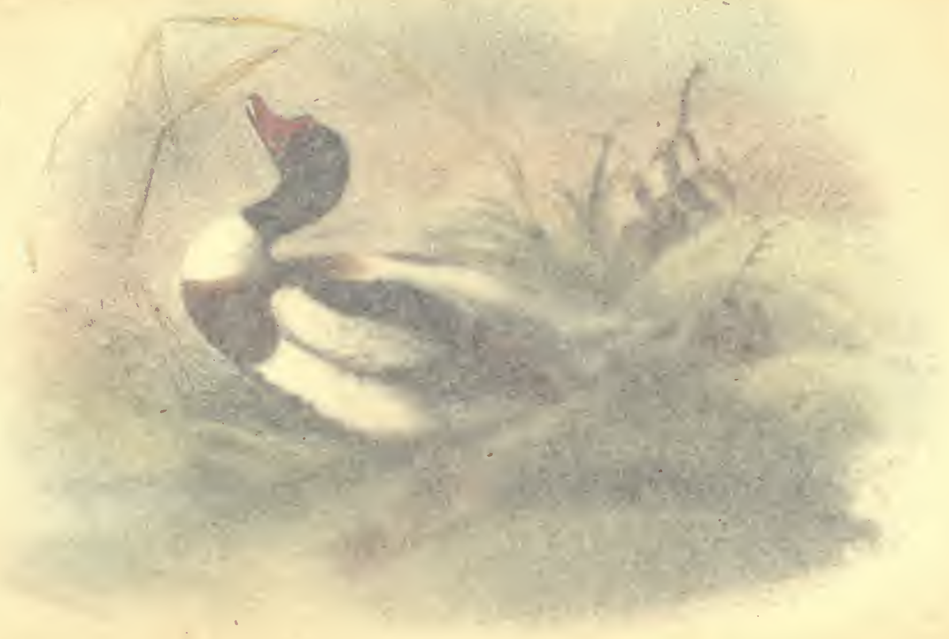
The Sheld-Ducks—of which the beautiful species figured in the accompanying plate is the typical representative—have the tarsus scutellated in front, a conspicuous wing-speculum, and the outer web of the innermost secondaries chestnut. On the edge of the bill the lamellæ are prominent, and are more developed towards the tip of the upper mandible. The bill widens out towards the tip, and is broader at the end than at the base, and on the lower mandible the lamellæ do not project outwardly. The sexes are alike in plumage, and the feet are flesh-coloured. These are the characters of the genus *Tadorna*, according to Count Salvadori, and they are ample for its definition, as the two species of which it consists are both remarkable for their coloration, and are easily recognisable. Besides *Tadorna tadorna*, the European species, there is but one other, *T. radjah*, of the Malayan Archipelago.

I. THE COMMON SHELD-DUCK. TADORNA TADORNA.

Anas tadorna, Linn. S. N. i. p. 195 (1766).
Tadorna vulpanser, Macg. Br. B. v. p. 22 (1852).
Tadorna cornuta, Dresser, B. Eur. vi. p. 451, pl. 420 (1878); B. O. U. List Br. B. p. 122 (1883); Saunders, ed. Yarr. Br. B. iv. p. 352 (1885); Seebohm, Br. B. iii. p. 520 (1885); Saunders, Man. p. 407 (1889); Lilford, Col. Fig. Brit. B. part xxvii. (1893); Salvad. Cat. B. Brit. Mus. xxvii. p. 171 (1895).

(*Plate LVI.*)

Adult Male.—General colour above varied, black, white, and orange-chestnut, the head being black with a gloss of bottle-green, the black occupying the entire head and upper throat;



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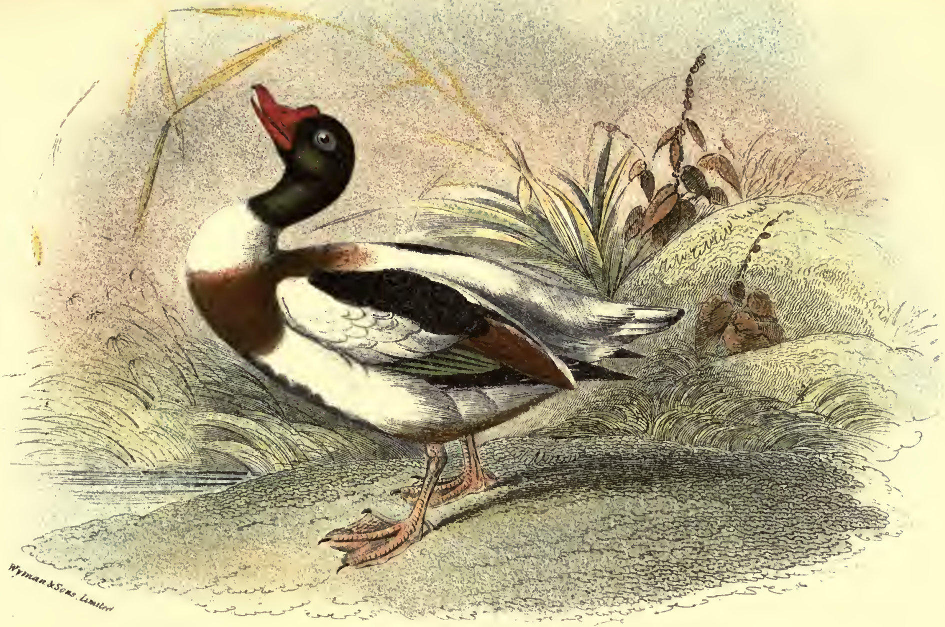
Tadorna cornuta, Dresser, B. Eur. vi. p. 451, pl. 420 (1878); B. O. U. List Br. B. p. 122 (1883); Saunders, ed. Yarr. Br. B. iv. p. 152 (1885); Seebohm, Br. B. iii. p. 52 (1885); Saunders, Man. p. 407 (1889); Lilford, Col. Fi Brit. B. part xxvi. (1893); Salvad. Cat. B. Brit. Mu xxvii. p. 171 (1895).

(Plate [illegible].)

Adult Male.—General colour above varied, black, white, an orange-chestnut, the head being black with a gloss of bott green, the black occupying the entire head and upper throat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COMMON SHELD-DUCK.

round the hind-neck a white collar, widening out into a broad band across the lower throat and fore-neck; this white band followed by a broad band of orange-chestnut occupying the mantle, and widening out in a broad band of the same colour across the chest, which is divided longitudinally by a black band, which descends down the breast and joins the black of the abdomen; the rest of the under-parts pure white, except the under tail-coverts, which are orange-chestnut; the back pure white from the mantle downwards, as also are the wing-coverts; the scapulars black, the inner ones half white and half black, and those nearest the back pure white; bastard-wing feathers white, blackish towards the ends; primary-coverts and quills black, ashy on their inner webs; secondaries black, externally metallic-green, forming a speculum, both bases of the inner webs white, the inner secondaries externally chestnut, internally white or ashy, and the innermost secondaries white like the back; tail white, with a band of black at the end; bill red, as well as the basal knob; feet and webs of toes fleshy-pink; iris hazel. After the breeding-season the knob, or shield, at the base of the bill is not so noticeable, and becomes dull pale red. Total length, 22 inches; culmen, 2·2; wing, 13·0; tail, 4·6; tarsus, 2·0.

Adult Female.—Not so handsomely coloured as the male, the chestnut of the mantle obscured by blackish frecklings, and the chestnut band across the chest represented by a sooty-black band, which only inclines to chestnut on the sides. The knob at the base of the bill is not developed. Total length, 20 inches; wing, 11·5.

Young Birds.—Much duller in colour than the adults, the head and throat being dusky-white with a good deal of black on the chin and fore-part of the cheeks; the black feathers of the back of a more or less brown, with white margins and ashy mottlings; the chestnut collar on the mantle scarcely defined at all, and the feathers mottled with blackish and edged with white; the entire under surface, from the throat downwards, is entirely white, without any black or chestnut, excepting a patch of the latter colour on each side of the upper breast. Mr. De Winton informs me that the Sheld-Duck does not breed during its second year, and the knob on the bill does not appear till the bird is at least two years old, and commences to breed for the first time. The knob increases in size with age.

Nestling.—Brown above, white beneath, with a slight yellowish tinge; forehead and sides of face white; in the middle of the back a white patch; a white patch on each side of the lower back, and a white streak along each side of the rump.

Characters.—The striking contrast of colours in this beautiful species, to say nothing of its red bill and frontal knob, render it easy of identification, and there is no other species of British Duck with which it can possibly be confounded.

Hybrids.—The Common Sheld-Duck has been known to interbreed with the South African Sheld-Duck (*Casarca cana*) and with the Wild Duck (*Anas boscas*). Cf. Salvadori, Cat. B. Brit. Mus. xxvii. p. 173.

Range in Great Britain.—The present species occurs in suitable localities on most parts of the British coasts, and is found breeding in those portions which afford it suitable nesting-places. Mr. Ussher states that it breeds in small numbers on the coasts of Donegal, Londonderry, Antrim, Down, Dublin, Wexford, Waterford, Kerry, Clare, and Mayo. In winter considerable numbers visit us from the north of Europe, and the bird is then killed in many parts of Great Britain, in which it is not seen in the summer.

Range outside the British Islands.—The Sheld-Duck is a Palæarctic bird, and breeds on the coast of Norway up to 70° N. lat., being only occasionally met with in the Færoes. It nests in Sweden, Denmark, the Baltic provinces, and Holland, as well as on the shores of France and Spain, but in other parts of Europe and the Mediterranean countries it is only known as a winter visitor. It is, however, again resident on the shores of the Black and Caspian Seas, and its range extends in localities suited to its habits, through Central Asia and Southern Siberia to Mongolia and Japan.

Habits.—From its habit of nesting in rabbit-holes in many parts of the country the Sheld-Duck is known as the "Burrow Duck," and the nest is often constructed at the end of a burrow to a depth of four or five feet, while the distance has also been known to extend to as many as twelve feet from the entrance, and in these cases the burrows are said to be excavated by the birds themselves. Mr. Robert Read states that the Sheld-Duck nests most commonly in burrows amongst the sand-hills by the seaside, but in Scotland he has found the nest in a rabbit-burrow amongst a group of trees near a fresh-water loch. When breeding in the sand-hills, the nest usually consists simply of the down of the parent-bird, but when near trees and herbage, there are generally a good many leaves mixed with the down.

Mr. W. E. de Winton observes that in South Wales the local names for this species are "Perrénet" and "St. George's Duck" (in Scotland, "Stockénet"), and he tells me that he has known them to nest on precipitous cliffs, in burrows at such a height that it is difficult to imagine how the young ones could be got down to the water; generally, however, the nest has been in rabbit-holes in the sand-dunes by the sea, covered with long sword-grass. There is seldom any track to the nest, into which the female appears to dive in full flight. When watching them, he has known the two birds to suddenly appear over a sand-hill, and then fly round and round together for some time, but on taking his eye off them for a moment, it has often happened that only the male is seen afterwards, the female having suddenly dived into the nest like an arrow.

The food of the Sheld-Duck consists of worms, small molluscs, and water-insects, as well as various aquatic plants, and also, it is said, of seaweeds. In many of their ways they resemble Geese, while Mr. Seebohm describes the flight as "performed by slow and laboured beats of the wings, very unlike the rapid motion of smaller Ducks, and much more resembling that of the Swan." The same writer says that the call-note, which is common to both sexes, is a harsh quack. During the pairing-season, the male utters a clear rapidly-repeated whistle or trill; and when the young are hatched, his anxious alarm-note to his mate on the approach of danger may constantly be heard, and resembles the syllables *kor-kor*, uttered in a deep tone. In confinement Lord Lilford says that he has never heard any noise produced by the birds beyond a short hiss, when bullying some other bird or fighting amongst themselves, but, he adds "I have heard occasionally on the coast of North Wales at night a somewhat Wigeon-like whistle that emanated, as I believe, from 'Sand-Geese' on the wing."

Nest.—Composed principally of the bird's own down, with a few leaves occasionally, as mentioned above by Mr. Robert Read. In some parts of Denmark the peasants make artificial burrows for the birds, and systematically rob the nest, as many as thirty eggs having been taken from one burrow in a single season.

Eggs.—From seven to twelve in number, but sometimes as many as sixteen have been found. They are dull creamy-white, with very little gloss. Axis 2·45–2·6 inches; diam., 1·8–1·95. The down is ashy-grey, with silvery white ends, and with a few white feathers intermingled.

THE RUDDY SHELD-DUCKS. GENUS CASARCA.

Casarca, Bp. Comp. List B. Eur. & N. Amer. p. 56 (1838).
Type, *C. casarca* (L.).

The members of the genus *Casarca*, according to the conclusions of Count Salvadori, differ from the typical Sheld-Ducks (*Tadorna*) in the following characters:—The bill does not widen towards the tip, and is no broader at the tip than it is at the base; the culmen is almost straight; the lamellæ are equally developed along the inner edge of the upper mandible, and the lamellæ on the edge of the lower mandible project outwardly; the bill and feet are dark, and the sexes generally differ in colour.

Four species of the genus *Casarca* are known, *C. casarca*, *C. cana* from South Africa, *C. variegata* from New Zealand, and *C. tadornoides* from South Australia and Tasmania. In the Ruddy Sheld-Duck, where the sexes are alike, there has as yet been no proof of any change of plumage in summer, such as occurs in most species of ducks. The post-nuptial plumage is probably emphasised by the loss of the black collar. In the three other species, however, where the sexes are different in colour, the male doubtless undergoes a change, as Mr. Blaauw has noticed a double moult in *C. tadornoides*.

I. THE RUDDY SHELD-DUCK. CASARCA CASARCA.

Anas casarca, Linn. S. N. iii. App. p. 224 (1768).

Tadorna casarca, Macg. Br. B. v. p. 19 (1852); Dresser, B. Eur. vi. p. 461, pl. 421 (1875); B. O. U. List Br. B. p. 122 (1883); Saunders, ed. Yarr. Br. B. iv. p. 347 (1885); id. Man. p. 409 (1889); Lilford, Col. Fig. Br. B. part xx. (1891).

Tadorna rutila, Seebohm, Br. B. iii. p. 524 (1885).

Casarca rutila, Salvad. Cat. B. Brit. Mus. xxvii. p. 177 (1895).

Adult Male.—General colour above tawny-chestnut; the wing-coverts paler and of a light fawn-colour, with white bases; bastard-wing, primary-coverts, and quills black; secondaries black internally, externally bronzy-green with a coppery gloss, the inner secondaries externally deep chestnut, ashy on the inner webs; lower back pale tawny, vermiculated with dusky-grey; rump, upper tail-coverts, and tail black, with a greenish gloss; under surface of body dark tawny, deepening into chestnut; under wing-coverts and axillaries white; the head and neck also tawny, but the crown paler and inclining to white, as also the lores; round the neck a black collar; bill black; feet black, somewhat brownish on the toes and tarsus; iris black. Total length, 25 inches; culmen, 1·7; wing, 14·5; tail, 4·9; tarsus, 2·2.

Adult Female.—Smaller than the male, and wanting the black collar; the head, face, and wing-coverts whiter; bill black; feet brown, blackish on the joints and black on the webs, except at the junction with the toes; iris deep brown. Total length, 22·5 inches; wing, 13·5.

There seems to be but little difference in colour between the summer and winter plumages of the Ruddy Sheld-Duck, but the feathers have sooty-brown centres in summer, and during the winter the black ring round the neck is absent, while the buff tinge on the wing-coverts is also probably a sign of the breeding-season, as these are white in many birds killed in the winter.

Young Birds.—Resemble the female, and have no black collar; they are also more dingy in colour.

Characters.—Besides the generic features given above, the general tawny-colour of the bird and its size serve to distinguish it from the other Ducks.

Range in Great Britain.—The Ruddy Sheld-Duck has occurred in all three kingdoms, but can only be considered a rare and occasional visitor, while some of the records of its capture are doubtless founded on escaped specimens, as the bird is frequently kept in confinement in this country. In 1892, however, there was a large immigration of wild birds, and a very interesting record of the visit of the Ruddy Sheld-Duck to Great Britain in the summer of 1892 has been published by Mr. F. Menteith Ogilvie in the "Zoologist" for that year (pp. 392-398). Flocks consisting of as many as ten to fourteen birds, in one instance twenty, were observed between the middle of June and the middle of September, and there were probably many others. Mr. Ogilvie surmises that it was from the South Russian habitat of the species that the immigration occurred. "Those that visited this country, being non-breeders, who probably accompanied the older birds on their northern journey in the spring, were driven away by them from the breeding-grounds, lost their bearings, and, crossing Russia and the North Sea, found themselves on our inhospitable shores." Mr. Ogilvie, however, notices that in every specimen killed, the inner secondaries were extremely worn, which looks as if the birds had nested, and seeing that the Ruddy Sheld-Duck is rather an early breeder, with the young swimming about on the 30th of May (cf. Seebohm, Brit. B. iii. p. 524), there is nothing to prevent the British specimens, at the end of June, from being birds which had bred in South-eastern Europe, and migrated north-west instead of south.

Range outside the British Islands.—In Asia the Ruddy Sheld-Duck breeds as far north as the Common Sheld-Duck, but in Europe it is a bird of the Mediterranean Sub-region, extending eastwards to Southern and Eastern Siberia, and Mongolia. In winter it visits Northern Africa, India, and China.

Habits.—However gregarious this species may be in winter, the observations of naturalists tend to prove that, during the breeding season, it is only found in isolated pairs, usually selecting holes of cliffs as its nesting-site, and often at a great height. Thus the species has been found breeding in Ladak and Tibet, at an elevation of 13,000 to 16,000 feet above the sea. The young birds are tended with great care by the mother, who shams to be wounded, so as to draw off attention from the young, while Dr. Henderson states that he saw a female make all her young ones dive, by swimming and flapping on to each of them as soon as it showed itself above water, after which she pretended to be wounded, and lay on the water every now and then, with wings spread out, as if unable to fly. It is evident that the old birds, breeding in cliffs so high above the water, must convey the young to the latter. The food of the Ruddy Sheld-Duck consists of grass and water-plants, as well as small molluscs.

Nest.—This is placed in a variety of situations, in a burrow, in the middle of a corn-field, in the cleft of a precipice, or, in Eastern Siberia, in the deserted nest of a bird of prey.

Eggs.—From nine to as many as sixteen in number, and creamy-white, with scarcely any gloss. Axis, 2·7–2·85; diam., 1·85–1·9. The colour of the down in the nest has not yet been described.

THE SHOVELERS. GENUS SPATULA.

Spatula, Boie, Isis, 1822, p. 564.

Type, *S. clypeata* (L.).

The Shovelers are very easily distinguished by their flat and shovel-like bills, and in their plumage they resemble the true Ducks, especially the Teal, having blue wing-coverts like some of the members of the genus *Nettion*. Two genera of Shoveler Ducks are known, the genus *Spatula* containing four species, of which our English *S. clypeata* is the best known and the most widely distributed; *S. rhynchotis* comes from Australia and New Zealand, *S. platalea* from S. America, and *S. capensis* from South Africa. Their range is, therefore, nearly cosmopolitan. In Australia and Tasmania another curious genus of Shovelers is found, *Malacorhynchus*, with a single species, *M. membranaceus*, confined to the countries above-mentioned.

I. THE SHOVELER. SPATULA CLYPEATA.

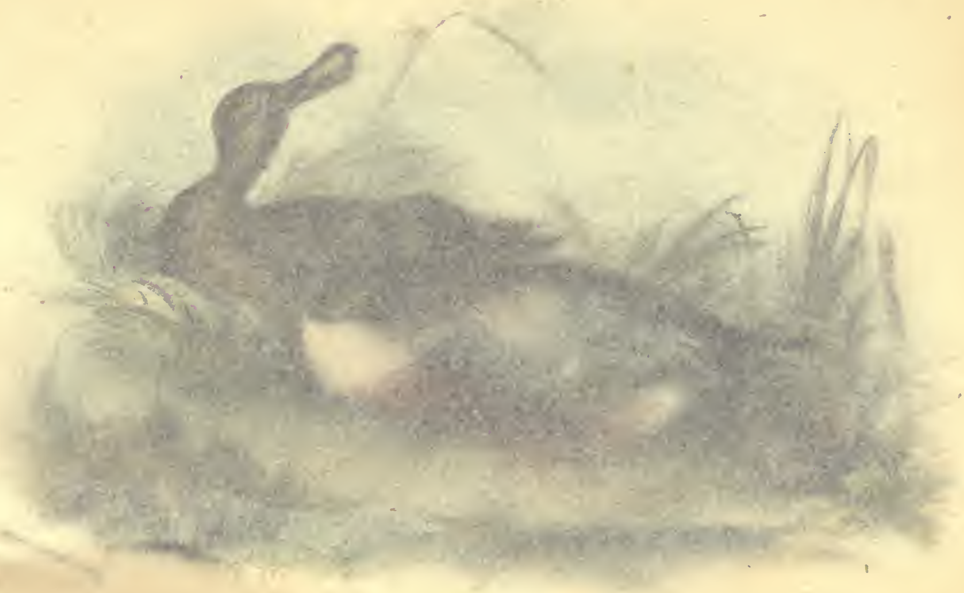
Anas clypeata, Linn. S. N. i. p. 200 (1766); Seebohm, Br. B. iii. p. 554 (1885); Lilford, Col. Fig. Br. B. part x. (1889).

Rhynchaspis clypeata, Macg. Br. B. v. p. 74 (1852).
Spatula clypeata, Dresser, B. Eur. vi. p. 497, pl. 425 (1873); B. O. U. List Br. B. p. 128 (1883); Saunders, ed. Yarr. Br. B. iv. p. 375 (1885); id. Man. Br. B. p. 415 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 306 (1895).

(*Plate LVII.*)

Adult Male.—General colour above blackish-brown on the mantle and upper back, becoming deep black on the lower back, rump, and upper tail-coverts, the lateral series of the latter glossed with steel-blue, of which there is also a faint gloss on the black rump; scapulars white, the long feathers greyish-blue, with a good deal of black towards the base of the inner web and a broad streak of white on the inner side of the shaft; wing-coverts greyish-blue, the greater series dusky internally, blue externally, and somewhat broadly tipped with white; bastard-wing, primary-coverts, and primary-quills blackish, the latter paler brown on the inner web, with white shafts; the secondaries brown, externally metallic steel-green, changing to purple under certain lights; the long inner secondaries externally velvety-black, with white centres towards the end of the shafts; centre tail-feathers black, the rest white, mottled and marbled with ashy-brown, the bars nowhere complete, and varying in shape; crown of head and lores dusky-black, without any metallic gloss; the sides of the face, neck, and throat black, glossed with green, and especially with purple on the hinder neck and crest; fore-neck and chest white, extending on to the sides of the chest, and nearly reaching in a collar round the hind-neck, in the centre of which are a few blackish feathers: remainder of under surface from the chest downwards vinous-chestnut, with a large white patch on each side of the vent; the flank-feathers paler buff at their ends, freckled with dusky, some of the feathers on the lower flanks freckled with dusky lines; under tail-coverts black, white at base with a few blackish wavy lines; the lateral under tail-coverts glossed with green or purple; axillaries and under wing-coverts white; lower under wing-coverts and quill-lining ashy-grey; bill lead-colour; feet reddish-orange; iris yellow. Total length, 19 inches; culmen, 2·55; wing, 9·5; tail, 3·3; tarsus, 1·3.

PLATE LVII.



SHOVELER

Rhynchaspis clypeata, Macg. Br. B. v. p. 74 (1852).
Spatula clypeata, Dresser, B. Eur. vi. p. 497, pl. 425 (1873); B. O. U. List Br. B. p. 128 (1883); Saunders, ed. Yarr. Br. B. iv. p. [illegible] (1885); id. Man. Br. B. p. 415 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 306 (1895).

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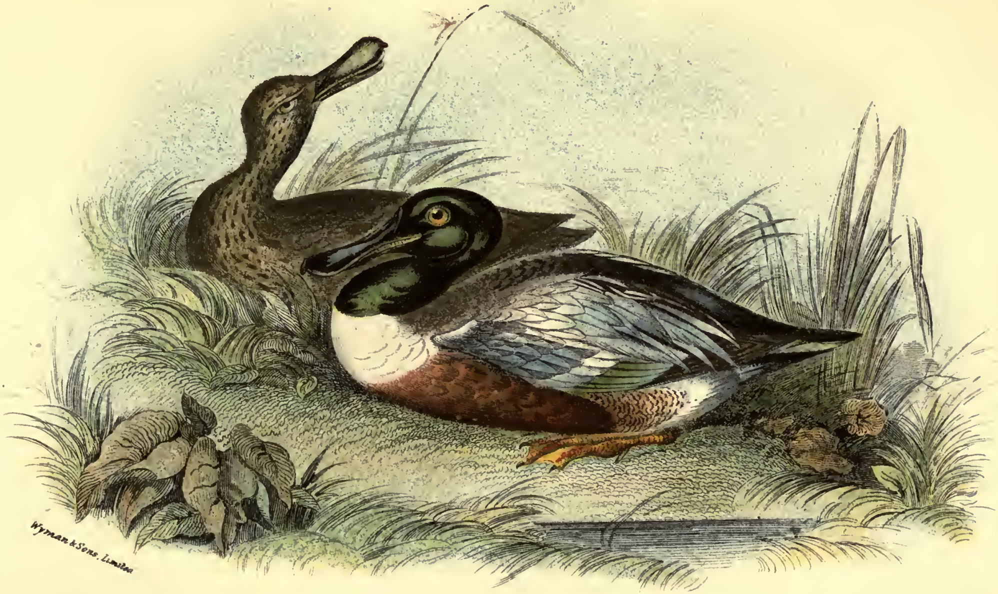
PLATE LVII.


Wyman & Sons, London

SHOVELER.

Adult Female.—General colour above dusky-brown, with ashy margins and irregular sandy-buff markings and marblings, the scapulars paler, barred and edged with whitish or pale buff; lower back and rump blackish-brown, the upper tail-coverts edged and irregularly barred with white or buff; wing-coverts blue like the male, the greater series more dingy and tipped with white; the quills as in the male and the speculum also metallic green, but the inner secondaries brown; crown of head nearly uniform blackish, as also the nape; lores, forepart of cheeks, and chin whitish; remainder of sides of face and sides of neck dull reddish-buff, streaked with narrow lines of dusky; the lower throat similarly streaked; remainder of under surface buff, a little paler in the centre of the abdomen; the chest and sides of body and flanks scalloped with dusky bars and markings, principally of a horse-shoe shape, very thickly distributed on the chest and less closely so on the flanks; the lower abdomen and under tail-coverts spotted with dusky; axillaries and under wing-coverts white. Total length, 17 inches; culmen, 2·6; wing, 8·8; tail, 3·6; tarsus, 1·25.

The young male in its first plumage, according to Count Salvadori, resembles the old female, but is distinguished by its more brightly coloured wings, the bill being pale reddish-brown, and the legs and feet flesh-coloured.

The male, after breeding, passes into a dark plumage, like that of the female, but with the crown dark brown. Mr. De Winton tells me that the pattern of this summer dress of the male is very much like that of the old female, but is much more rufous, and the bill becomes orange and black, the feet red, and the iris is orange instead of lemon-grey. All trace of the breeding-dress is gone, no bright colours remaining, except the blue of the wing-coverts.

Young in Down.—Nearly uniform above, like the nestling Wigeon, with some indistinct paler spots, and a dark brown stripe through the eye, as in the Mallard. The bill is not widened at the tip, but the spatulated form is very rapidly developed.

Hybrids.—Apparently few instances of the crossing of the

Shoveler with any other species of Duck have been recorded, though Von Tschusi has mentioned an instance of its mating with a Domestic Duck.

Characters.—The flattened form of the Shoveler's bill, widened at the end, and "spatulate," as it is called, as well as the blue wing-coverts, and the green speculum in the wing, distinguish this species.

Range in Great Britain.—A few pairs breed annually in England, especially in parts of Norfolk, where the Ducks are protected, as well as in the marsh-lands of other parts of England and Scotland. It nests on the island of Tiree, where Colonel Irby has found it, but not on the Outer Hebrides. In many localities it is increasing in numbers as a breeding-bird, and the same may be said of Ireland, where, according to Mr. Ussher, it nests sparingly in Donegal, Antrim, Fermanagh, Westmeath, Louth, Dublin, Queen's County, Galway, Roscommon, Mayo, and Sligo, and probably in King's County and Kerry. During the winter the species occurs in most parts of Great Britain.

Range outside the British Islands.—The Shoveler is found in America, as well as in the Old World, and breeds in temperate North America, visiting the United States in winter, and extending as far south as Panama. In Europe it does not go so far north as some of the other Ducks, and is a species of the temperate portions of Europe and Asia, visiting Northern Africa, India, and China in winter. It has been procured in Borneo, and seems to wander as far south as Australia.

Habits.—This species is more of a fresh-water Duck than many of its relations, and frequents marshes and inland lakes, where it searches in the shallows for the food which its broad bill enables it easily to sift, as it consists of tender shoots of grass and weeds, as well as aquatic insects and small molluscs, while it is also said to include tadpoles, frogs' spawn, and very small fish. As a rule, it is not so shy as other Ducks, and, in its winter quarters in India, it is described by Mr. Hume as being very tame. The female is a devoted mother, and watches over her brood with great anxiety, while Mr. Whitaker states that he has found the male bird sitting on the eggs. When flying, the bird is said by Mr. Seebohm to utter a guttural note, "puck-puck," and Mr. Howard Saunders says that the note during the breeding-season is "took-took." The quack of the Duck is said by Mr. Seebohm to resemble that of the domestic species, the voice of the drake being a little the deeper, and sounding like *quaak*, while that of the duck might be represented as "quauk."

Nest.—A neat but unskilfully made structure of grass, placed in a tuft of reedy grass or heath, without much lining beyond that of the bird's own down, and a little grass.

Eggs.—Five or six in number, of a pale buffy-white or greenish-white. Mr. Robert Read found ten eggs in a nest in Scotland. Axis, 2·05–2·4; diam., 1·5. Down very dark, spotted with white. The colour is dark brown, with whitish tips, scarcely visible, and with a white star-like spot in the centre of the plume.

THE TRUE DUCKS. GENUS ANAS.

Anas, Linn. Syst. Nat. i. p. 194 (1766).

Type, *A. boscas* (L.).

The common Duck, of which the Mallard is the type, is distinguished from the other Ducks rather by negative than positive differences, as one gathers from Count Salvadori's characters of the genus *Anas*. It has no chestnut on the inner secondaries like the Sheld-Ducks, but possesses a generally mottled plumage, without any large uniform patches, as in the foregoing birds. Nor is the bill spatulate as in the Shovelers, but is rather broad, and is of about the length of the head. From the Shovelers and some of the Teal it differs also in having the wing-coverts dull grey, and not blue.

I. THE WILD DUCK, OR MALLARD. ANAS BOSCAS.

Anas boschas, Linn. S. N. i. p. 205 (1766); Macg. Br. B. v. p. 31 (1852); Dresser, B. Eur. vi. p. 469, pl. 422 (1873); Lilford, Col. Fig. Brit. B. part viii. (1888).

Anas boscas, B. O. U. List Br. B. p. 125 (1883); Seebohm, Br. B. iii. p. 559 (1885); Saunders, ed. Yarr. Br. B. iv. p. 358 (1885); Saunders, Man. Br. B. p. 411 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 189 (1895).

Adult Male.—General colour above brown, deepening into black on the lower back, the rump and tail-coverts being black, with a purplish or green gloss; the scapulars pearly-grey, with very fine wavy lines of darker grey, the outer scapulars dark chestnut-brown, continuous with the dark outer webs of the innermost secondaries; the wing-coverts ashy-grey, more or less washed with brown; the greater coverts with a sub-terminal bar of white, the tips being black, and forming the upper border to the wing-speculum; bastard-wing, primary-coverts, and quills ashy-brown, externally more grey; the inner webs of the primaries conspicuously lighter and more ashy; the secondaries ashy-grey on the inner web, metallic-purple on the outer web, and tipped with white, before which is a sub-terminal bar of velvety-black; the colour of the speculum varying, according to the light, from rich purple to steel-blue or greenish-blue; the inner secondaries pearly-grey, those adjoining the speculum being externally chestnut-brown; centre tail-feathers recurved, black like the rump, the rest of the feathers white, with grey or brown centres, these dark centres gradually disappearing and only represented by ashy frecklings on the outer ones; head and neck all round metallic-green, changing into purple according to the light; on the lower throat a narrow white band not completely joining on the nape; fore-neck and chest deep chestnut, extending on to the sides of the neck and nearly meeting on the hind-neck; remainder of under surface greyish-white, finely freckled with ashy vermiculations, which are more distinct on the sides of the body; under wing-coverts and axillaries white; under tail-coverts velvety-black; bill olive-yellowish; feet and toes orange; iris dark brown. Total length, 22 inches; culmen, 2·4; wing, 11·0; tail, 3·5; tarsus, 1·8.

Adult Female.—Entirely different from the male, brown above with reddish margins and centres to the feathers, imparting a narrowly streaked appearance to the head and neck, and a broadly streaked appearance to the back, but it must be noticed that great variation in these markings takes place; wing-coverts dark ashy-brown, the greater series and the secondaries banded with white, the former with a velvety-black tip and the latter with a sub-terminal black bar; the speculum is therefore as in the male, but it is not so bright and is more broadly bordered with black; the inner secondaries bordered with rufous, like the scapulars; lower back, rump, and upper tail-coverts like the upper back; tail-feathers ashy-whitish, centred with dark brown, which is more or less broken up into rufous markings; under surface of body yellowish-buff; the throat uniform, but the sides of the face and neck streaked like the head; the chest and sides of the body mottled with dark brown centres to the feathers; fore-neck and chest tinged with chestnut; under tail-coverts white, with black streaks; under wing-coverts and axillaries white. Total length, 20 inches; culmen, 2·1; wing, 10·3; tail, 3·4; tarsus, 1·5.

Young Males and Young Females.—Almost alike in plumage, and at first resembling the old female in general appearance, but the darker head and blacker appearance of the back are generally sufficient to distinguish the males, which have also a clearly indicated dark eye-stripe. Young birds also seem to be much more plentifully streaked with brown on the underparts. For a short period in the summer, males assume a plumage only to be distinguished from that of the female by its blacker appearance above, the feathers of the back being edged with rufous, while the crown and a broad stripe through the eye are also black; the quills are fully moulted, as well as the body feathers, and the full plumage is again assumed by a direct moult.

Hybrids.—These are so many that it is impossible to enumerate them all here. Crossings with at least a dozen other species of Ducks are recorded by Count Salvadori.

Range in Great Britain.—Of all the fresh-water Ducks, the Mallard is the commonest, and though it was more plentiful in former days, there are still so many places where it is encouraged to breed, that it is extremely numerous in some districts, and every winter there is a vast accession of numbers due to arrivals from the Continent. At this season of the year, the species quits its northern habitat, and is absent from many of the northern districts of Scotland and its islands. It breeds, according to Mr. Ussher, in every county in Ireland.

Range outside the British Islands.—The Mallard may be said to be an inhabitant of the temperate portions of the Palæarctic and Nearctic Regions, not breeding north of the Arctic Circle, but throughout Europe, including the Mediterranean countries, and across the temperate portions of Asia, and wintering in India and China. It even breeds in Cashmere. In America it breeds in the temperate latitudes, and wanders south in winter, when it is found as far south as Panama.

Habits.—The tame Duck of our farmyards, which is sufficiently well-known to preclude any special description of its habits, is a derivative of the true Wild Duck, but the latter bird in its native habitat is decidedly a wary bird.

The Mallard is a very interesting species to study where one has an opportunity of so doing, as its habits are very varied. Sometimes numbers of nests will be found in the growing grass of a meadow close to a lake, at other times most curious situations are chosen for the nest. In the choice of a situation the Duck is very cautious, and it is often not discovered until the appearance of the young ones betrays its situation. It is especially where there are plenty of foxes that the wariness of the Duck is developed, and at Avington Park—where the head-keeper once told me that he had known forty sitting ducks to be taken off their nests in a season by foxes—I have found some curious sites for the nest. One was in a dell, quite half a mile from the lake, and it was artfully concealed under some outgrowing roots of a tree; another was made in the hollow between two wide-spreading limbs of an oak, about ten feet from the ground, and quite a mile away from any water. Mr. De Winton has known a nest to be built in the thick ivy on the wall of a house. Mr. Robert Read also tells me that he has found it in the open amongst heather, under a rock amongst bracken, in rushes by the water-side, and in the hollow of a pollard-tree, while in 1894, he found a nest on the Thames with ten eggs and one egg of a Pheasant.

Like the tame Duck, the Mallard is almost omnivorous in its choice of food, many kinds of aquatic plants and weeds, as well as all kinds of water-insects, worms and slugs, forming its staple diet, but it will also eat grain, acorns, &c.

Nest.—Although generally carefully concealed, the nest is rather loosely made of grass and rushes, and is lined with the bird's own down.

Eggs.—From eight to ten or twelve in number, though as many as sixteen have been found; greenish or greenish-white in colour, sometimes inclining to buffy-white. Axis, 2·1–2·35 inches; diam., 1·6.

Down.—Mostly light brown, with whitish thread-like tips, but mixed with a considerable number of pure white downy plumes.

THE GADWALLS. GENUS CHAULELASMUS.

Chaulelasmus, Bp. Comp. List B. Eur. & N. Amer. p. 56 (1838).

Type, *C. streperus* (L.)

Two species only of Gadwall are known, the widely distributed *C. streperus*, and Coues' Gadwall, *C. couesi*, which is only known from the Fanning Islands. The bill is not so broad as in the genus *Anas* and is shorter than the head, and has no fringe of soft membrane near the tip; the lamellæ of the upper mandible are quite prominent (*Salvadori*). The colouring of the two sexes is not nearly so different as in the generality of Ducks. The central tail-feathers scarcely extend beyond the lateral ones.

I. THE GADWALL. CHAULELASMUS STREPERUS.

Anas strepera, Linn. S. N. i. p. 200 (1766); Saunders, ed. Yarr. Br. B. iv. p. 370 (1885); Seebohm, Br. B. iii. p. 530 (1885); Saunders, Man. p. 413 (1889); Lilford, Col. Fig. Br. B. part xv. (1890).

Querquedula strepera, Macg. Br. B. v. p. 59 (1852).

Chaulelasmus streperus, Dresser, B. Eur. vi. p. 487, pl. 424 (1873); B. O. U. List Br. B. p. 125 (1883); Salvad. Cat. B. Brit. Mus. xxvii. p. 221 (1895).

Adult Male.—General colour above dusky-brown, the hind-neck, mantle, and upper scapulars freckled with wavy bars of black and ashy-white; the lower back darker and scarcely freckled; the rump and upper tail-coverts velvety-black; the long scapulars margined with tawny-brown; wing-coverts ashy, with a few dusky frecklings; the median-coverts for the most part chestnut; the greater coverts velvety-black; bastard-wing, primary-coverts, and quills dark ashy, paler on the inner webs; the outer secondaries velvety-black and tipped with white, the inner ones white externally, forming a speculum, the innermost ashy-grey; tail-feathers ashy-grey, edged with white towards the ends, and mottled with dark brown near the ends of the outer feathers; crown of head dusky-brown, slightly mottled with paler edges to the feathers; eyebrow and sides of face ashy, minutely spotted with dusky-brown; lores and base of forehead more hoary; cheeks and throat whitish, minutely spotted with dusky; fore-neck and chest closely barred with dusky-blackish and white, the bars irregular in shape, but mostly circular; remainder of under surface white, with a few dusky streaks on the abdomen; the sides of the body and flanks thickly freckled with wavy lines of dusky-blackish; under tail-coverts black; under wing-coverts and axillaries pure white; bill black; feet orange, almost the whole of the web black. Total length, 19 inches; culmen, 1·6; wing, 10·5; tail, 3·5; tarsus, 1·5.

Adult Female.—Different from the male. General colour above brown, with edges of sandy-buff and irregular bars and frecklings of the same colour; the wings as in the male, but the black of the greater wing-coverts much reduced in extent and the white speculum not so large; the chestnut patch on the median-coverts entirely absent; tail mottled with irregular bars of brown and buff; head rather darker than the back and more uniform; eyebrow, sides of face, and throat buff, minutely lined with streaks of blackish-brown; the lower throat and fore-neck more rufescent, as also the sides of the body, flanks, and under tail-coverts, all these parts being strongly mottled, with blackish centres to the feathers; the rest of the under surface white, more minutely spotted with dusky; under wing-coverts and axillaries white. Total length, 19·5 inches; wing, 9·9.

Young Males.—At first resemble the old females, but are more barred on the back and not so streaked with sandy-buff. They are densely spotted with brown on the under surface, and may be distinguished by having a little chestnut on the greater wing-coverts, and by having a broad black border to the outer aspect of the speculum, as in the male. In the female the external black border to the speculum is scarcely visible, and there is no chestnut on the greater wing-coverts.

The Gadwall Drake, like the Mallard, assumes a sort of female plumage, after the breeding-season. The male then resembles the female, but is darker, as is the case with the other Ducks which assume the female coloration. The black rump, which is so characteristic of the adult Gadwall, disappears, as do the distinctive markings of the wing, and the male in the hen-like plumage can scarcely be told from the female, Mr. De Winton says that the summer dress is not so distinctive as in some of the other Ducks, as the male does not lose his speckled breast or all the vermiculated feathers of the body, or the black under tail-coverts. The bill has much more yellow on it, and is more like that of the hen, while the feet are dull orange, with sooty webs.

Nestling.—Very dark chocolate-brown, with a blackish head; a broad eyebrow of buff, followed by a distinct eye-line of brown; on each side of the mantle some white marks, and a distinct white spot on each side of the rump; under surface of body yellowish-white.

Characters.—The male Gadwall is easily recognised by the chestnut and black patch on the wing, and by its *white speculum.* The female has the same characters, but the amount of chestnut on the wing is smaller.

Range in Great Britain.—Chiefly known as a winter visitor, though it now breeds plentifully in certain parts of Norfolk, where it has been preserved. In the series of nests of British birds in the National Museum is one presented by Lord Walsingham, from Merton, where the species breeds regularly. It occurs, however, only as a winter visitor to Scotland and Ireland.

Range outside the British Islands.—The Gadwall does not breed in the Arctic Regions, but is known to do so in Iceland, as well as in Southern Sweden and the Baltic provinces, and throughout Northern and Central Europe. Throughout the Mediterranean countries it also breeds, and Mr. Howard Saunders says that it nests in Spain near the mouth of the

Guadalquivir; while in winter it extends to Northern Africa and up the valley of the Nile into Nubia. It occurs throughout Central Asia, breeding in Turkestan, and reaches to the Pacific coast in Eastern Siberia. The eastern birds winter in India and China. The Gadwall also breeds in North America at about the same latitudes as in the Old World, and is found in winter as far south as Mexico and the Greater Antilles.

Habits.—The Gadwall is a great skulker and always shy, but on the water it is a very smart-looking bird, as it swims lightly, with its feathers brushed hard back to a point behind its neck. It is a fresh-water Duck and is not often captured on the sea coasts, and is to a great extent gregarious, being sometimes seen in hundreds on fresh-water lakes. It has a powerful flight, and rises easily from the water. Its food consists of leaves and flower-buds of water-plants, and in India, according to Mr. A. O. Hume, largely of rice, so that in the early season its flesh is said to be excellent. Like other Ducks, the diet also partly consists of insects and their larvæ, small frogs, and worms. The name of *strepera*, or "noisy," is a decided misnomer for the present species, as it is a very quiet Duck. Lord Lilford says that the note of the male is a curious rattling croak, a sort of mixture of the alarm-cry of the Mallard and the sound uttered by the male Garganey.

Nest.—A mere depression in the ground, with a scanty lining of dry grass, bits of reed or rush, and, in some cases, a few dead leaves. It is carefully concealed by the overhanging grass or rushes.

Eggs.—From eight to twelve in number; buffy-white or creamy-white, and slightly glossy, some inclining to greenish. Axis, 2·1–2·25 inches; diam., 1·55.

Down.—Light brown, with a centre star of white, the filaments brown at the ends, not silvery-whitish; there is also an admixture of pure white downy plumes.

THE WIGEON. GENUS MARECA.

Mareca, Steph. Gen. Zool. xii. pl. 2, p. 130 (1824).

Type, *M. penelope* (L.).

The form of the Wigeon is very similar to that of the Gadwalls, but the lamellæ of the upper mandible are not so prominent, the tail is rather more acuminate, and the central feathers extend somewhat beyond the lateral ones. The bill is small and gradually tapering towards the tip. The above characters are given for the genus by Count Salvadori, and to them must be added the style of plumage, which is well pronounced; thus, though many recent writers have placed the Gadwalls, Shovelers, and Wigeon in the genus *Anas*, I thoroughly agree with Count Salvadori that they should be separated as distinct genera. Three species of Wigeon are known, our British bird (*M. penelope*), the American Wigeon (*M. americana*), and *M. sibilatrix* from South America.

I. THE WIGEON. MARECA PENELOPE.

Anas penelops, Linn. S. N. i. p. 202 (1766).

Anas penelope, Gm. Syst. Nat. i. p. 527 (1788); Seebohm, Br. B. iii. p. 539 (1885).

Mareca penelope, Macg. Br. B. v. p. 83 (1852); Dresser, B. Eur. vi. p. 541, pls. 432, 433 (1876); B. O. U. List Br. B. p. 123 (1883); Saunders, ed. Yarr. Brit. B. iv. p. 397 (1885); id. Man. p. 425 (1889); Lilford, Col. Fig. Br. B. part xv. (1890); Salvad. Cat. B. Brit. Mus. xxvii. p. 227 (1895).

Adult Male.—General colour above grey, with fine vermiculations of darker grey, the lower back and rump more finely vermiculated; the sides of the lower rump white; central tail-coverts grey, with coarser vermiculations and the ends of the feathers white, the lateral upper tail-coverts velvety-black; lesser wing-coverts grey, very finely vermiculated; the median- and greater wing-coverts pure white, forming a large patch, the latter tipped with velvety-black, forming the upper border to the speculum; bastard-wing, primary-coverts, and quills ashy-grey, the inner webs dusky, with a mirror of buff on the inner web of the primaries; the secondaries grey internally, metallic-green externally, but black at the ends, this forming the wing-speculum; the next inner secondary white externally, forming an inner border to the speculum, the next three inner secondaries externally velvety-black, with white shafts, the innermost grey with darker vermiculations like the scapulars; crown of head light cinnamon-buff, paler on the lores; the hinder crown, nape, and hind-neck, as well as the sides of the face and throat, chestnut, slightly mottled with green behind the eye and on the occiput; the lower throat and fore-neck, as well as the sides of the neck and of the chest, pale vinous, shaded with grey; remainder of under surface of body from the fore-neck downwards pure white; the under tail-coverts black; the sides of the body ashy-grey, finely vermiculated with darker grey; under wing-coverts ashy-grey; axillaries white, freckled with grey; bill bluish lead-colour, black at the tip; feet and toes dark brown; iris hazel. Total length, 18 inches; culmen, 1·45; wing, 10·4; tail, 4·1; tarsus, 1·55.

Adult Female.—Differs from the male, the back being ashy-brown, narrowly barred with rufous on the hind-neck and mantle; the dorsal feathers brown-edged with ashy-grey, these edgings becoming whiter on the rump and upper tail-coverts; the scapulars with more rufous margins; wing-coverts ashy-grey, margined with white, more broadly on the greater series; the bastard-wing, primary-coverts, and primaries as in the male; the secondaries dusky-brown, externally black and tipped with white, but not showing a distinct speculum like the male; inner secondaries velvety-black, edged with white on the outer web, and separated from the black speculum by a line of white, caused by the white outer web of a single inner secondary; tail ashy-brown, narrowly fringed with white; crown of head blackish, with small white bars, producing a thickly mottled appearance; lores, sides of face, and sides of throat fulvous, dotted and spotted with blackish, throat slightly more rufous; remainder of the under surface pure white; the under tail-coverts centred and barred with brown; the sides of the chest and of the body mottled with rufous. Total length, 16 inches; wing, 9·6.

Young Birds.—Are at first like the old female, and the males evidently take some time, probably two or three years, before they acquire their perfect livery. The younger birds with the speculum developed have often only half the wing-coverts white, and, judging by a specimen in the British Museum, killed in June at Kiukiang by Mr. Styan, I should say that, until the second summer, the male retains a wing exactly like that of the old female. After the breeding-season, Mr. De

Winton writes to me, "both males and females assume a very distinct summer dress of reddish-brown, though the female is not quite so rufous. In the male all traces of the beautiful breeding-dress disappear." Sir Savile Crossley, finding that I was interested in the summer plumage of Ducks, very kindly had a pair of Wigeon caught for me and sent up to London alive. On the day of their arrival (August 24th) the male had moulted his wings and assumed the full plumage, speculum and all, but the female was still helpless, the quills being in full moult. The male, however, still retained much of his post-nuptial dress, and the feathers of the back were blackish, with rufous margins and bars; the head and neck were rufous, spotted with black, but distinctly glossed with green; the chest and sides of the body were dark chestnut, mottled with sub-terminal bars of black.

The female was darker than the male, but the feathers were also blackish, with rufous bars and margins, and the head was especially dark, almost black, but with a very distinct green gloss; the wing-markings, however, were very different from those of the male, and resembled, as far as the feathers were developed, those of the full-plumaged hen-bird.

Characters.—The Wigeon is distinguished by the white patch on the wing, formed by the median and greater coverts, the grey bill tipped with black, and the green speculum.

Hybrids.—Crosses have been known to take place between the Wigeon and Mallard, Teal, and Pin-tail. The latter are very rare, but Sir Edward Grey possesses a brood of the latter hybrids hatched on his estate in Northumberland.

Range in Great Britain.—Occurs chiefly in England during autumn and spring migration, sometimes in immense numbers. It has not been known to nest anywhere in England, but in the north of Scotland, in Sutherland, Ross, Cromarty, and Caithness it breeds regularly. Mr. Ussher writes with regard to the Wigeon in Ireland:—"Lord Caledon states that he has seen the old birds in summer, at Caledon, Co. Tyrone. A pair of Wigeon were seen in June, 1893, on Lough Allen in Leitrim." The mere appearance of birds during the summer does not prove that they bred in the neighbourhood. This autumn a specimen was sent to the British Museum as a young Wigeon, and the bird in question was supposed to have been hatched in Hampshire, but it was not a young bird at all, but an *old* male, changing from his short-lived summer plumage to his full dress, and, therefore, he was probably a non-breeding individual which had remained in southern latitudes instead of going north to breed. This I take to be the case with the birds which have been seen in Norfolk and other counties of England during the summer.

Range outside the British Islands.—Breeds in the Arctic Regions of the Old World, from Iceland to Eastern Siberia. It also breeds occasionally in more southern latitudes, and its eggs have been taken on the Lower Danube by Mr. Seebohm, so that the improbability of its breeding in England is lessened, as the same author states that its nests have been found in France, Germany, and Bohemia. The range of the species extends eastwards to Kamtchatka. In winter it ranges south to Abyssinia and to Madeira, as well as to Northern India and the Burmese provinces and China, while stray examples have been met with in Borneo, and even as far south as the Marshall Islands. In North America it is found in Alaska and occurs as for south as California, and it is also found in winter on the Atlantic coasts.

Habits.—In winter, when the Wigeon principally visits our coasts, it is a gregarious bird, and often occurs in enormous flocks on the sea-coasts and also on inland lakes, herding together on the latter with other Ducks, especially the Tufted Duck. The male, as is evidenced by the birds lent to me by Sir Savile Crossley, gets through his summer moult more rapidly than the female, and leaves to the latter the charge of bringing up the young. Lord Lilford says that "the note of the male bird is a shrill double whistle, once heard never to be forgotten," and Mr. Seebohm writes, "The cry of this Duck is a prolonged whistle or scream, immediately followed by a short note. I can best represent it by the syllables *mee-yu*, the first very loud and prolonged, the last low and short. It sounds very wild and weird, as in startles the ear on the margin of a mountain tarn or moorland lake, a solitary cry, high in key, not unmusical in tone, but one of the most familiar sounds on the banks of the Petchora or the

Yenesei, where the Wigeon is very abundant, especially on the banks of the borderland where the forest merges into the tundra not far north of the Arctic Circle."

Nest.—The nests, according to Mr. Seebohm, are well concealed, generally close to the margin of a lake or pond, and are placed in the long grass and sedge, often under a willow-bush. Like those of most Ducks which breed in the Arctic Regions, they are very deep, well lined with dead grass and sedge, and, when the full clutch is laid, contain a quantity of down with which the eggs are covered when the female leaves the nest.

Eggs.—From seven to ten in number, more rarely twelve being found; buffy-white or cream-colour. Axis, 2·0–2·25 inches; diam., 1·45–1·55.

Down.—Extremely dark chocolate-brown with a dull star of white, and dull whitish filaments at the end of the down. The general aspect, however, is dark brown, the white being scarcely visible.

II. THE AMERICAN WIGEON. MARECA AMERICANA.

Anas americana, Gm. S. N. p. 526 (1788); Seebohm, Br. B. iii. p. 543 (1885).

Mareca americana, Macg. Br. B. v. p. 90 (1852); B. O. U. List Br. B. p. 124 (1883); Saunders, ed. Yarr. Br. B. iv. p. 403 (1885); id. Man. Br. B. p. 427 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 233 (1895).

Adult Male.—Differs from *M. penelope* in having the upper part of the head whitish instead of buff, the sides of the head and upper neck whitish, thickly spotted with black, and a broad patch of green extending from behind the eye to the hinder nape; bill light greyish-blue, black at the end; legs and feet light bluish; iris brown. Total length, 18 inches; culmen, 1·6; wing, 10·2; tail, 4·4; tarsus, 1·4.

Adult Female.—Differs from the female of *M. penelope* in having the head and neck much whiter, the light part of the feathers being whitish instead of reddish-brown. Total length, 16·5 inches; culmen, 1·4; wing, 9·6; tail, 3·2; tarsus, 1·5.

Range in Great Britain.—In the winter of 1837–38, Mr. Bartlett secured a specimen of the American Wigeon from a market in London. He preserved the bird, which afterwards passed into the collection of Mr. J. H. Gurney. In these days of freezing-chambers on board ship, the presence of a foreign Duck in an English market would be absolutely worthless as evidence of the occurrence of the species within the British area, but sixty years ago the modes of transit were not so easy, and the appearance of an American Wigeon among a lot of English Wigeon may be taken as sound evidence that the specimen had been procured within British limits. The few other records of the occurrence of the species in Great Britain all appear to be untrustworthy, though its capture once in France and again in the Azores is authentic.

Range outside the British Islands.—The American Wigeon breeds in the arctic portion of North America, occasionally as far south as the Northern United States. In winter it extends to the Southern States, Mexico, and the West Indies.

Habits.—Similar to those of *M. penelope.*

Nest.—Like that of *M. penelope.*

Eggs.—Pale buff. Axis, 2·06 inches; diam., 1·48 (*Ridgway*).

THE TEAL. GENUS NETTION.

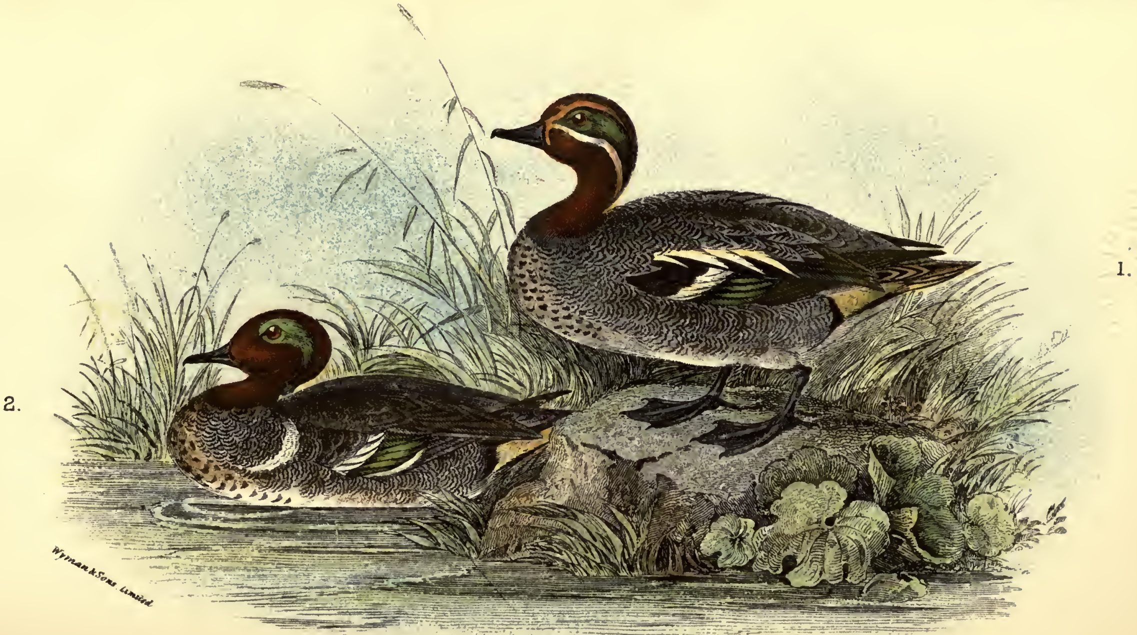
Nettion, Kaup, Natürl. Syst. p. 95 (1829).

Type, *N. crecca* (L.).

Though resembling the Wigeon in the character of the bill, which has the lamellæ of the upper mandible scarcely at all prominent, the Teal differ in having the bill moderate, and graduated towards the tip, where it becomes more rounded and broader than in the species of *Mareca ;* the scapulars and inner secondaries are longer and narrower than in that genus, and the coloration of the two sexes is distinctly different.

Fifteen species are recognised by Count Salvadori, and the range of the genus is cosmopolitan.

PLATE LVIII.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1. TEAL. 2. AMERICAN TEAL.

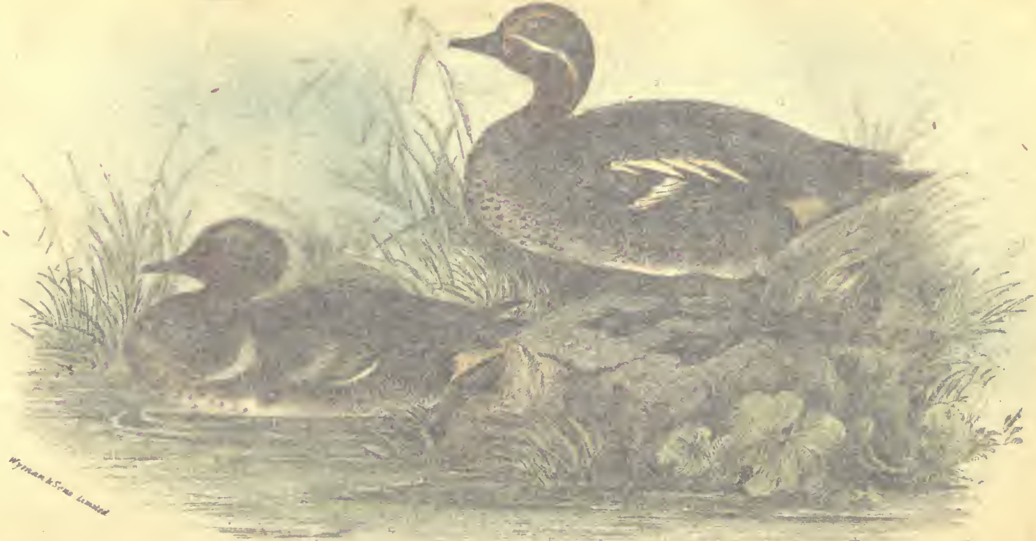
1. THE COMMON TEAL. NETTION CRECCA.

Anas crecca, Linn. S. N. i. p. 204 (1766).
Querquedula crecca, Macg. Br. B. v. p. 48 (1852); Dresser, B. Eur. vi. p. 507, pl. 426 (1871); B. O. U. List Br. B. p. 127 (1883); Saunders, ed. Yarr. Br. B. iv. p. 387 (1885); Seebohm, Br. B. iii. p. 545 (1885); Lilford, Col. Fig. Br. B. part viii. (1888); Saunders, Man. Br. B. p. 419 (1889).
Nettion crecca, Salvad. Cat. B. Brit. Mus. xxvii. p. 243 (1895).

(*Plate* [illegible] *Fig.* 1.)

Adult Male.—General colour above dusky-grey, with somewhat coarse vermiculations of ashy-grey; the scapulars, lower back, and rump browner, with dusky centres to the feathers and scarcely any vermiculations; the outer scapulars black and white, forming a double line of these colours; the upper tail-coverts blackish, with whiter margins; wing-coverts brownish ashy-grey, the greater series broadly tipped with white, the inner ones with cinnamon-buff, forming a band along the upper edge of the speculum; the bastard-wing, primary-coverts, and quills dusky-grey, the inner webs of the primaries browner; the outer secondaries velvety-black, the inner ones externally metallic-green, or purplish-blue in other lights, followed by a line of velvety black, of which the outer web of some of the inner secondaries are composed; the innermost secondaries ashy-brown; tail-feathers ashy-brown; crown of head deep cinnamon or chestnut, as also the sides of the face and throat; the chin black, extending in a line at the base of the bill to the forehead, which is also blackish; this is succeeded by a line of creamy-buff in a crescent from the base of the bill to the eye, and is continued above the latter in a narrow line along the side of the crown; the eye is surrounded by a black band glossed with green or purple, which unites on the [illegible] is bordered below for some distance by a line of [illegible] tinuous with the line which divides in front of [illegible] eyelid with a white spot; under surface of body [illegible] the fore-neck and breast more fulvescent, and [illegible] with black; the sides of the body and flanks [illegible] dusky-grey and blackish; under tail-coverts [illegible] ones bordered with white, the [illegible] dusky; on each side of the vent a patch [illegible]

PLATE LVIII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1. TEAL 2. AMERICAN TEAL

I. THE COMMON TEAL. NETTION CRECCA

Anas crecca, Linn. S. N. i. p. 204 (1766).

Querquedula crecca, Macg. Br. B. v. p. 48 (1852); Dresser, B. Eur. vi. p. 507, pl. 426 (1871); B. O. U. List Br. B. p. 127 (1883); Saunders, ed. Yarr. Br. B. iv. p. 387 (1885); Seebohm, Br. B. iii. p. 545 (1885); Lilford, Col. Fig. Br. B. part viii. (1888); Saunders, Man. Br. B. p. 419 (1889).

Nettion crecca, Salvad. Cat. B. Brit. Mus. xxvii. p. 243 (1895).

(*Plate LVIII. Fig.* 1.)

Adult Male.—General colour above dusky-grey, with somewhat coarse vermiculations of ashy-grey; the scapulars, lower back, and rump browner, with darker centres to the feathers and scarcely any vermiculations; the outer scapulars black and white, forming a double line of these colours; the upper tail-coverts blackish, with whiter margins; wing-coverts uniform ashy-grey, the greater series broadly tipped with white, the inner ones with cinnamon-buff, forming a band along the upper edge of the speculum; the bastard-wing, primary-coverts, and quills dusky-grey, the inner webs of the primaries browner; the outer secondaries velvety-black, the inner ones externally metallic-green, or purplish-blue in other lights, followed by a line of velvety-black, of which the outer web of some of the inner secondaries are composed; the innermost secondaries ashy-brown; tail-feathers ashy-brown; crown of head deep cinnamon or chestnut, as also the sides of the face and throat; the chin black, extending in a line at the base of the bill to the forehead, which is also blackish; this is succeeded by a line of creamy-buff in a crescent from the base of the bill to the eye, and is continued above the latter in a narrow line along the side of the crown; the eye is surrounded by a black band, glossed with green or purple, which unites on the nape, and is bordered below for some distance by a line of white continuous with the line which divides in front of the eye; lower eyelid with a white spot; under surface of body creamy-white; the fore-neck and breast more fulvescent, and thickly spotted with black; the sides of the body and flanks vermiculated with dusky-grey and blackish; under tail-coverts black, the longer ones bordered with white, the basal ones white barred with dusky; on each side of the vent a patch of creamy-buff, with a velvety-black base; under wing-coverts and axillaries white; bill nearly black; feet, toes, and membrane brownish-grey; iris hazel. Total length, 14 inches; culmen, 1·5; wing, 7·0; tail, 2·7; tarsus, 1·1.

Adult Female.—Different from the male. Dark brown above, with crescentic or horse-shoe markings of tawny-buff on the mantle and back; the lower back, rump, and upper tail-coverts dusky and more blackish-brown, mottled with whitish edgings and centres to the feathers; wing as in the male, with an equally distinct speculum, showing green in certain lights and purplish-blue in others; the black border to the inner margin of the speculum dusky-black, not velvety-black; crown of head rufous-brown with dusky streaks; sides of face and throat ashy-whitish, minutely spotted with dusky; lores, a spot under the eye, and upper throat white; breast white, with a slight reddish tinge on the fore-neck, this and the breast and flanks mottled, and the under tail-coverts streaked with dark brown centres to the feathers. Total length, 15·5 inches: culmen, 1·25; wing, 6·7; tail, 2·5; tarsus, 1·1.

Mr. De Winton writes to me concerning the post-nuptial plumage of the Teal:—"In the summer dress it is very difficult to tell the males from the females, and they resemble each other more than any Duck I know. After a close inspection, the chief difference I can find is that the males have a more lead-coloured head, with no light stripe over the eye, but they show a little buff at the sides of the base of the tail. The female has a pale stripe over the eye, though this is never so distinct as in the hen Garganey."

Young.—At first both sexes resemble the old female in plumage, but are more distinctly mottled with dark centres to the feathers of the under surface, while the wing-coverts have pale margins.

Hybrids.—The Teal has been known to cross with other Ducks, such as the Mallard and Pin-tail, while the so-called Bimaculated Duck (*A. bimaculata*) is now admitted to be a hybrid between a Teal and a Mallard.

Range in Great Britain.—The Teal nests in most parts of the British Islands, but more plentifully in the north. Mr. Ussher says that it is reported to breed in every county in Ireland except Dublin and Carlow. On migration there is a large increase in the numbers of Teal which visit us, and the species is commoner in winter.

Range outside the British Islands.—The range of the present species in summer extends from Iceland throughout Northern Europe and Asia to Bering Island, breeding as far north as 70° N. lat. In Southern Europe it is less frequent, though it nests in Madeira and in the Azores, but it is more plentiful in the Mediterranean countries in winter, when it ascends the Nile Valley and visits Abyssinia. In Central Asia and Eastern Siberia the species breeds more sparingly, but nests abundantly in the Commander Islands, and it is a common winter visitor to the Caspian Sea, the Indian Peninsula, China, and the Burmese countries. It is an occasional visitor to Greenland and the Eastern United States, as well as to Alaska.

Habits.—This is the smallest of the English Ducks, and is found in winter in a variety of places, on the lakes consorting with the Mallards and Wigeon, though keeping to itself in small parties, which generally take flight by themselves. At other times Teal may be found singly in water-holes in the marshes. Mr. Seebohm writes:—"Its habits differ very little from those of its congeners; perhaps it might be said that the Teal is more partial to small reedy ponds, and less fond of visiting the mud-banks on the sea-shore than its relations; but its food is the same mixture of animal and vegetable substances. Its quack, or alarm-note, is very similar to that of the Garganey, and may be represented by the syllable *knake*, but the call-note of both sexes is a sharp *krik*, and in the pairing-season the drake utters a harsh grating noise. It is quite as gregarious as its congeners."

Like the Mallard, the Teal often builds its nest at some distance from water, and Lord Lilford says that he feels sure that, in such instances, it "carries its young to the splashy spots in which it delights."

Nest.—Does not differ from that of the other Ducks, and is lined with down. As an instance of the early nesting of the Teal, Mr. Robert Read writes to me:—"I have taken the nest of the Teal in May, under a tuft of heather on a hillside overlooking a fresh-water loch in Scotland. In the same locality

I know of a nest with two fresh eggs having been found in February, when the ground was covered with snow. A shepherd, seeing the hole in the snow, put his head in, expecting to get a rabbit, when out flew the female bird."

Eggs.—Eight to ten in number; buffy-white or cream-colour, some greenish-white. Axis, 1·65–1·9 inches; diam., 1·2–1·35. Mr. Seebohm says that they are, as a rule, smaller than those of the Garganey, but they can only be distinguished with certainty by the down. This is sooty or deep chocolate-brown, with a very conspicuous star of white, the tips not being whitish, but brown, scarcely visible.

II. THE AMERICAN TEAL. NETTION CAROLINENSE.

Anas carolinensis, Gm. S. N. i. p. 533 (1788); Seebohm, Br. B. iii. p. 549 (1885).

Querquedula carolinensis, B. O. U. List Br. B. p. 127 (1883); Saunders, Man. Br. B. p. 421 (1889).

Nettion carolinense, Salvad. Cat. B. Brit. Mus. xxvii. p. 250 (1895).

(*Plate LVIII. Fig.* 2.)

Adult Male.—Very similar to that of *N. crecca*, but distinguished by the whitish crescent on each side of the upper breast; the whitish line which envelops the green patch on the sides of the head, and passes to the base of the bill, is scarcely visible, and the scapulars are uniform pale grey; bill black; feet light fleshy (horn-colour when dried); iris brown. Total length, 13·5 inches; culmen, 1·5; wing, 7·3; tail, 2·95; tarsus, 1·1.

Adult Female.—Not to be distinguished from that of *N. crecca*.

Range in Great Britain.—Three specimens of this little Teal have been captured in England, one near Scarborough in 1852, another in Hampshire, and one near Kingsbridge in South Devon. Full particulars are given by Mr. Howard Saunders in his "Manual."

Range outside the British Islands.—An inhabitant of North America, breeding chiefly north of the United States, and ranging in winter as far south as Honduras and Cuba (*Ridgway*).

Habits.—Similar to those of *N. crecca.*

Eggs.—Pale dull buff. Axis, 1·75 inch; diam., 1·28 (*Ridgway*.

THE PIN-TAILS. GENUS DAFILA.

Dafila, Steph. Gen. Zool. xiii. part 2, p. 126 (1824).
Type, *D. acuta* (L.).

The Pin-tailed Ducks, though in general structure much resembling the members of the preceding genera, have a distinctive character in their long tail, the central feathers of which are elongated beyond the rest and pointed. The culmen also is nearly straight.

With the exception of Australia and New Zealand, the range of the genus *Dafila* may be said to be almost cosmopolitan. Only three species are recognised by Count Salvadori, for the *Dafila modesta* of Canon Tristram, from the Fanning Islands, will, in all probability, prove to be *D. acuta*, which has already been procured in Borneo on its southern migration. *D. eatoni* inhabits Kerguelen Island, and the Crozettes, and *D. spinicauda* is peculiar to South America.

I. THE PIN-TAIL. DAFILA ACUTA.

Anas acuta, Linn. S. N. i. p. 202 (1766); Seebohm, Br. B. iii. p. 534 (1885).
Querquedula acuta, Macg. Br. B. v. p. 65 (1852).
Dafila acuta, Dresser, B. Eur. vi. p. 531, pls. 430, 431 (1873); B. O. U. List Br. B. p. 124 (1883); Saunders, ed. Yarr. Br. B. iv. p. 380 (1885); id. Man. Br. B. p. 417 (1889); Lilford, Col. Fig. Br. B. part xiii. (1890); Salvad. Cat. B. Brit. Mus. xxvii. p. 273 (1895).

Adult Male.—General colour above ashy-grey, finely vermiculated with wavy lines of blackish; the long scapular plumes and inner secondaries bordered with white, and longitudinally centred with black, with a slight inclination to form a sickle-shaped curve; the upper scapulars black for the greater part of their outer web, forming a large patch; lower back and rump rather more dusky than the upper back; the upper tail-coverts ashy-grey, with the centre or outer webs black, and the edge white; the two centre tail-feathers black, six inches long, and produced far beyond the tail; the rest of the tail-feathers grey with white margins, the inner ones blackish on the outer web; wing-coverts uniform grey, the greater series tipped with pale cinnamon, forming a band along the upper margin of the speculum; the bastard-wing, primary-coverts, and quills grey, except the outer webs of the latter and the tips, which are dusky; the secondaries externally bronzy-green, broadly tipped with white, before which is a sub-terminal bar of black; the inner secondaries externally black, forming a broad hind margin to the speculum; crown of head, sides of face, and upper throat chocolate-brown, the crown slightly mottled with dusky, and the lower margin of the throat-patch inclining to sooty-brown, with a streak of bronzy-green gloss from behind the eye down the sides of the nape; hind-neck ashy, with scarcely any trace of freckling, separated from the crown by a patch of black on the nape. Under surface of body pure white, this running up on the sides of the neck and forming a broad band which reaches to the nape; the sides of the body freckled with narrow wavy lines of grey; on each side of the lower flanks a conspicuous patch of buff; under tail-coverts black, the lateral ones edged with white; under wing-coverts ashy, margined with white; axillaries white, with a few dusky bars or shaft-stripes; bill black, pale leaden-blue on sides of upper mandible; legs and feet blackish-grey, paler on outside of tarsus and web of toes; iris brown. Total length, 25 inches; culmen, 2·0; wing, 10·7; tail, 5·0; tarsus, 1·9.

Adult Female.—Different from the male. Brown above, the feathers edged with sandy-buff or white and barred or irregularly spotted with the same colour, the markings being generally in the shape of a horse-shoe; wing-coverts ashy-grey, with whitish margins, more distinct on the greater coverts; the quills brown, darker at the ends; the secondaries broadly edged with white at the ends and slightly darker brown, but showing no speculum; the tail-feathers brown, margined with white and irregularly barred with sandy-buff; crown of head rufous-brown, narrowly streaked with blackish; the sides of the face fulvescent, with tiny streaks of dusky-brown extending down the sides of the neck, but absent on the throat, which is white; remainder of under surface of body white, with a few spots of dusky-brown, only distinct on the fore-neck and sides of body where the feathers are centred with bars of brown; under wing-coverts ashy, with whitish margins; axillaries ashy, with irregular bars of white. Total length, 18 inches; culmen, 1·7; wing, 9·7; tail, 4·1; tarsus, 1·5.

A speculum is present in some birds said to be females, but it is much less distinct than in the males, and generally consists of a gloss of bronzy-green on the feather.

The old male, when out of plumage after the breeding-season, resembles the female, but is much darker above and more spotted underneath; the bars on the back are narrower and more distinctly transverse, instead of being of a horse-shoe shape; the speculum is like that of the full plumage.

Mr. De Winton writes:—"The two sexes in their summer dress closely resemble each other. The breast, under-parts, and tail-coverts of the male are handsomely marked with crescent-shaped spots, the general colour is greyer than in the female, and the back does not quite lose its distinctive colouring. The bill is not strikingly bicoloured, so that if the two birds are not swimming close together, it is not very easy to distinguish them."

Hybrids.—The Pin-tail has been known to cross with the Mallard, the tame Duck, the Teal, and the Shoveler.

Range in Great Britain.—Known almost entirely as a winter visitor, though it probably breeds in a few isolated localities in Scotland. Mr. Harvie Brown has taken eggs from the island of Hysgeir, off Canna, and Mr. Howard Saunders has also seen young birds on the same island. It is commoner on the east of Scotland than on the west, but is much more frequent on the south and east coasts of England, being sometimes captured inland. Sir Ralph Payne-Gallwey states that he has seen female Pin-tails with young broods on Loughs Mask and Corrib, and has noticed the species in summer on Lough Inagh in Connemara. It has also bred many years ago near Granston in Queen's County, and Lord Castletown still possesses the egg, according to Mr. R. J. Ussher, who, however, states that there is "no recent evidence of the Pin-tail breeding in Ireland."

Range outside the British Islands.—The Pin-tail is a bird of very wide distribution. It inhabits America, breeding in the far north in Alaska and Labrador up to 72° N. lat., wintering as far south as the West Indies and Panama. In the old World it breeds plentifully in the Arctic Regions up to 70° N. lat., and as far south as 50°, but less frequently, and its breeding-range extends across Northern Asia to Bering Island. In winter it visits the Indian Peninsula and China, and has been found as far south as Borneo, and it doubtless occurs even farther to the southward.

Habits.—For grace and elegance of form in the water, the Pin-tail is probably the handsomest of our British Ducks. It is essentially a fresh-water species. Mr. Seebohm gives a very interesting account of his experiences with the Pin-tail in the Petchora, which space forbids me from quoting in full, but I give the following extract from his notes on the species:—"It breeds in the midst of moors, lakes, rivers, and swamps, but during migration and in winter it spends most of its time on the sea-shore, to feed on the mud-flats at low tide. It is one of the earliest Ducks to arrive in spring, and one of the latest to leave in autumn. If the ground be not covered with snow, it makes its appearance in North Germany about the middle of March, and passes through again during the month of October, remaining in November until it is frozen out. In its habits it closely resembles the Mallard, feeding, like the other fresh-water Ducks, partly on insects and molluscs, and partly on the ends of grass and the buds of water-plants, but, like the Mallard, it frequents the stubble-fields in autumn to pick up the fallen grain. Its voice closely resembles that of the Mallard and the Shoveler, but on the whole it is a silent bird. This may be accounted for by its extreme wariness; it takes such great care to avoid danger, that its alarm-note of quack is not often required. Its call-note is a low *kah;* and Naumann says that, in the pairing-season, the male may be seen swimming round the female, uttering a deep *clük*, which, if the observer be fortunate enough to be sufficiently near to hear it, is preceded by a sound like the drawing-in of the breath, and followed by a low grating note."

Nest.—Somewhat deep, with a lining of grass and sedge, placed, according to Mr. Seebohm, in the grass among the shrubs in dry places, generally at some distance from the water.

Eggs.—From seven to ten in number, of a pale greenish-buff colour. Axis, 2·05–2·4 inches; diam., 1·4–1·5. The down is dark brown, with scarcely distinguishable whitish filaments at the tips, but having a very prominent central star of white.

THE GARGANEYS. GENUS QUERQUEDULA.

Querquedula, Steph. Gen. Zool. xii. part 2, p. 142 (1824).
Type, *Q. querquedula* (L.).

The Garganeys, or Blue-winged Teal, differ from the true Teal (*Nettion*), with which they have generally been associated, in the soft membrane which fringes the terminal portion of the upper mandible, and the blue upper wing-coverts, in which respect they greatly resemble the Shoveler.

Out of the five species recognised by Count Salvadori as belonging to this genus, two are exclusively South American, viz., *Q. versicolor* and *Q. puna;* two are North American, *Q. discors* and *Q. cyanoptera*, wintering in Central and South America; and one, *Q. querquedula*, is Palæarctic.

I. THE GARGANEY. QUERQUEDULA QUERQUEDULA.

Anas querquedula, Linn. Syst. Nat. i. p. 203 (1766).

Anas circia, Linn. Syst. Nat. i. p. 204 (1766); Seebohm, Br. B. iii. p. 551 (1885); Lilford, Col. Fig. Brit. B. part xiii. (1890).

Querquedula circia, Macg. Br. B. v. p. 55 (1852); Dresser, B. Eur. vi. p. 513, pl. 427 (1871); B. O. U. List Br. B. p. 126 (1883); Saunders, ed. Yarr. Br. B. iv. p. 393 (1885); id. Man. Br. B. p. 423 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 293 (1895).

Adult Male.—General colour above dark brown, the centres of the feathers being blackish and the edgings reddish-brown;

the lower back, rump, and upper tail-coverts darker than the back, the feathers being blackish with ashy-grey margins; tail-feathers dark brown, with paler edges; wing-coverts delicate lavender-grey, the greater coverts broadly tipped with white, forming a broad band across the wing and making the upper border of the speculum; bastard-wing and primary-coverts ashy-brown, with rather broad white margins; quills blackish, more ashy on the inner web; secondaries dusky-brown, externally dull metallic-green and broadly tipped with white, forming the lower border to the green speculum; inner secondaries brown edged with whitish, and externally ashy near the base, the innermost blue-grey; the adjoining scapulars long and slightly sickle-shaped, black with a slight greenish gloss, and relieved by a well-defined white longitudinal streak along the shaft; crown of head blackish, extending to the nape; a few pale shaft-streaks on the forehead; from above the eye a broad band of white skirting the black; lores, sides of face, and throat deep vinous-red, with numerous tiny shaft-streaks of white; the fore-neck and breast sandy-buff, thickly barred with lines and circular marks of blackish; abdomen white, or with a buff tinge, especially on the under tail-coverts, which are mottled and streaked with brown centres; sides of body white, with fine cross-bars of greyish-black, with a double band of white and blue-grey divided by a black line on each side of the lower flanks; under wing-coverts and axillaries white, the edge of the wing bluish-grey; bill black; feet greyish-brown; iris hazel. Total length, 16 inches; culmen, 1·55; wing, 7·3; tail, 2·7; tarsus, 1·0.

Adult Female.—Different from the male. General colour above dark brown, with rufescent edges to the feathers; lower back and rump somewhat darker, with whitish margins; upper tail-coverts brown, edged and barred with rufescent or buffy-white; tail-feathers similar to those of the male; wing-coverts light brown, washed with ashy-grey; the greater coverts margined with white, forming a white wing-bar; quills dark brown, the secondaries blackish, tipped with white; crown of head minutely streaked with brown and buffy-white, as also the sides of the face and neck, becoming lighter on the hind-neck; an indistinct eyebrow of dull white; chin and throat white; lower throat longitudinally streaked with minute brown centres to the feathers, like the sides of the neck; the feathers on the fore-neck and sides of body white, mottled with brown centres; remainder of under surface buffy-white, with indistinct brown centres to some of the feathers, becoming pear-shaped on the under tail-coverts; under wing-coverts white, the outer ones brown, edged with white; axillaries pure white. Total length, 14·3 inches; wing, 6·8.

Young Birds.—At first resemble the old female, but the colour is rather darker and the breast is more rufous. They are very like young Teal, but can be distinguished by the absence of the green speculum.

In post-nuptial plumage the colour of the male becomes like that of the old female, but it can always be distinguished by its brighter green speculum. The hen-like dress is retained for a longer period than in most Ducks, and remains of it can be seen in specimens shot well into the winter season.

Range in Great Britain.—The Garganey, or Summer Teal, as it is also called, comes to England in the spring, and nests in the eastern counties, but is of irregular occurrence elsewhere. Mr. De Winton writes to me:—"It is possible that the Garganey succeeds in rearing a brood in parts of England not yet recorded. An occasional pair visit Herefordshire, and I have known them to be shot as late as May, when they ought to be hatching off. In 1894, Mr. Ashdown, the well-known local taxidermist, received a pair in the second week in May."

In Scotland and Ireland and the greater part of England the Garganey is only of occasional occurrence in spring, and again on its return migration in autumn.

Range outside the British Islands.—The range of the Garganey seems to be more southerly than that of the other species. It is only known as an accidental visitor to Scandinavia, the Færoes, and Iceland, but breeds throughout the rest of Europe and as far north as Archangel. In Asia it is found breeding in Turkestan and Southern Siberia, but not in Northern Asia. In winter the Garganey is found in the Mediterranean, the Black and the Caspian Seas, and extends as far south as Somali-land, while in the east it is plentiful during the winter in India and China, and goes as far as Borneo and the Moluccas.

Habits.—In its ways the Garganey resembles the Teal, but Mr. Seebohm calls attention to a few slight peculiarities in the habits of this species, viz., its intolerance of cold, which is apparently the reason that the bird does not venture so far north as its congeners, and accounts also for its earlier departure south. Its flight is very rapid, but almost noiseless, and altogether the Garganey is somewhat of a silent species. He adds :—"Its quack is not so loud as that of the Mallard, but is in a slightly higher key; it may be represented by the syllable *knake*, whence the German name for this duck 'knäkente.'" It is generally uttered singly, but is sometimes repeated twice. The quack is common to both sexes, but in the breeding-season the male utters a harsh grating note resembling *kr-r-r*."

Nest.—According to Mr. Seebohm, this is placed in a variety of positions—hidden under a bush or in thick grass or sedge, far away from water in the forest or among the corn, anywhere and everywhere where a hidden retreat can be found. It is made very deep, and is lined with dead grass and leaves, to which plenty of down is afterwards added.

Eggs.—From eight to twelve, sometimes as many as fourteen; buffy-white or cream-colour. Axis, 1·7–1·8 inch; diam., 1·3.

Down.—Very dark, sooty-black in colour, with indistinct filamentous tips of ashy-white, and a small but tolerably well-marked star of white in the centre of the down.

II. THE BLUE-WINGED TEAL. QUERQUEDULA DISCORS.

Anas discors, Linn. S. N. i. p. 205 (1766).
Querquedula discors, B. O. U. List Br. B. p. 126 (1883); Saunders, ed. Yarr. Brit. B. iv. p. 392 (1884); id. Man. p. 422 (1889); Salvad. Cat. B. Brit. Mus. xxvii. p. 300 (1895).

Adult Male.—Differs from *Q. querquedula* in having the wing-coverts bright smalt-blue instead of pale blue, and also by having a crescent-shaped white band between the eyes and the bill of the male; the throat and sides of the face are sooty-grey, and the crown of the head black; the under surface of the body is much darker than in *Q. querquedula*, and is thickly spotted all over with dusky markings; bill black; feet yellowish; iris brown. Total length, 14·5 inches; culmen, 1·7; wing, 7·6; tail, 3·0; tarsus, 1·3.

Adult Female.—Darker than the female of *Q. querquedula*, and easily distinguished by its blue wings and dusky speculum; the under surface of the body deep buff, thickly mottled with brown centres to the feathers, very broad on the flanks. Total length, 14 inches; wing, 7·0.

Range in Great Britain.—A purely accidental visitor, of which only one authentic occurrence is known, a male bird having been shot near Dumfries. The species has also been procured in Denmark, in April, 1886.

Range outside the British Islands.—North America in general, but chiefly east of the Rocky Mountains, in winter, the whole of the West Indies and Middle America, south to Ecuador (*Ridgway*).

Habits.—Similar to those of *Q. querquedula*.

Eggs.—Pale buff. Axis, 1·84 inch; diam., 1·34.

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